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ENTRIES 872-1323

AGRONOMY

C. V. PIPER, Editor

872. CALVINO, MARIO. Una leguminosa forrajera interesante para Cuba. [A leguminous forage crop for Cuba.] *Revist. Agric. Com. y Trab.* 2: 196-199. 8 fig. 1919.—The "Kudzu vine," *Pueraria hirsuta* Schneider [*P. thunbergiana* (S. & Z.) Benth.], appears to do well in Cuba and produces viable seeds. A chemical analysis of the plant is given.—F. M. Blodgett.

873. TAYLOR, W. H. Selection of seed potatoes. *New Zealand Jour. Agric.* 18: 37-38. 1919.—It is advised that seed be selected only from high yielding hills. The hills should be lifted "when the tubers have nearly finished growing, but before the haulm begins to wither," the author asserting that immature seed produces heavier crops than seed that is fully matured.—H. A. Jones.

874. CALVINO, M. La Jicama de Agua. (*Pachyrhizus tuberosus*.) [The Yam Bean.] *Revist. Agric. Com. y Trab.* 2: 84-88. 8 fig. 1919.—This plant which is commonly grown in Mexico for its fleshy root is recommended for Cuba. Analysis of roots and tops are given and the results of an experiment showing the necessity of removing flowers to produce roots.—F. M. Blodgett.

875. BARTHE, A. B. Cultivo industrial de la higuera. III. Perspectivas Cubanas. [Cultivation of the castor bean.] *Revist. Agric. Com. y Trab.* 2: 89-96. 4 fig. 1919.—Brief descriptions of a few varieties of castor bean tried in Cuba are given, together with estimates of cost of growing and profits.—F. M. Blodgett.

876. FROMME, F. D., AND S. A. WINGARD. Bean rust: its control through the use of resistant varieties. *Virginia Agric. Exp. Sta. Bull.* 220: 18 p. Pl. 1-5. 1918 [1919].—See Bot. Absts. 3, Entry 1174.

877. COCKATNE, A. H. Foxglove and its control. *New Zealand Jour. Agric.* 18: 28. 1919.—Foxglove (*Digitalis purpurea*) is very common in New Zealand and listed in some sections as a noxious weed. The usual method of eradication is by pulling, but more attention should be given to cleaning up those areas of land likely to produce greatest revenue. There is evidence to believe that on good grass lands this weed will disappear in a period of five to eight years without band pulling.—N. J. Giddings.

878. AAMODT, A. W. Favor three varieties. *Potato Mag.* 1st: 15. 1 fig. 1919.—Reports various methods of potato growers in Minnesota.—Donald Folsom.

879. ANONYMOUS. What government market news service does. *Potato Mag.* 1st: 22. 1919.—Gives examples of profitable modification in potato growing methods made on basis of market news.—*Donald Folsom.*

880. WEARNER, H. O. A Nebraska view of the potato grades. *Potato Mag.* 1st: 23. 1919.—Proposes another grade based on uniformity.—*Donald Folsom.*

881. MILLER, JUSTUS. Northern Ontario seed potato trade. *Potato Mag.* 1st: 5, 33-34. 1919.—Concerns original condition of stock, importation of seed, certification, cooperation, and effect of variety, soil type, and source of seed on yield.—*Donald Folsom.*

882. WHEELER, H. J. What potatoes need in Wisconsin. *Potato Mag.* 1st: 14-31. 1 *fig.* 1919.

883. MACOUN, W. T. Growing potatoes in crates or pens. *Potato Mag.* 1st: 20. 2 *fig.* 1919.—Describes test which resulted in the disapproval of the method.—*Donald Folsom.*

884. MUNGER, H. E. Why grade Colorado potatoes? *Potato Mag.* 1st: 20-21. 1 *fig.* 1919.—Advocates grading on basis of greater salability.—*Donald Folsom.*

885. BENNETT, E. R. Cultural essentials in arid west. *Potato Mag.* 1st: 11. 1919.—Concerns chiefly the preparation of soil and application of water for potatoes.—*Donald Folsom.*

886. HACKER, G. H., J. E. RICKARDS, E. E. KAUFMAN, AND R. G. RISERN. California crop distribution and estimates, 1918. A bulletin dealing with the acreage, distribution, tonnage and valuation of commercial fruit and vegetable crops in California. *Monthly Bull. Comm. Hort. California* 4: 143-225. Fig. 63-93. 1919.

887. EASIO, E. O. Two interesting weeds. A new weed and a forage plant introduced into Ventura County. *Monthly Bull. Comm. Hort. California* 2: 79. 1919.—During the summer of 1918, a new weed appeared in Ventura County, California. H. M. Hall of the University of California identified it as the hoary cress (*Lepidium draba* L.). Jepson reports it as escaping in the San Francisco Bay region and as thoroughly naturalized and filling fields in Yreka, Siskiyou County. Donald Penny reports it as a noxious weed in Santa Cruz County.—A grass, identified by P. B. Kennedy of the University of California as amilo grass (*Oryzopsis miliacea* B. & H.) has recently been introduced into Ventura County, California. In San Diego County this grass is being grown as a dry-land forage crop. The indications are that where a stand can be obtained it would be a valuable forage crop for many of the harra hills of the southern coast region of California.—*E. L. Overholser.*

888. JOBS, H. La forêt et le pâturage boisé à la Société des Forestiers. [Forest and pasture as discussed by the Vaud Society of Foresters.] *Bull. Trimest. Soc. Forestière Franche-Comte et Belfort* 13: 15-18. 1919.—See Bot. Abstr. 3, Entry 550.

889. McCLELLAND, C. K. Cotton and corn, cultural tests, and variety tests of 1917 and 1918. *Georgia Agric. Exp. Sta. Bull.* 128: 63-73. Feb., 1919.—Notes on rainfall, culture, fertilization and varieties of *Gossypium herbaceum* and *Zea mays*. Four hundred pounds of fertilizer per acre proved economic for corn. Velvet beans (*Stizolobium* sp.), planted with corn at the same time usually reduced the corn yield; if planted later the reduction may or may not be important according to the growth of the beans. The value of the beans produced is always greater than the value of the corn lost. Results show that late chopping of cotton produces a slightly earlier crop than the ordinary practice of early chopping.—*T. H. McHatten.*

890. McCLELLAND, C. K. The velvet bean. Georgia Agric. Exp. Sta. Bull. 129: 83-98. Fig. 1-6. Feb., 1919.—A short history of the introduction and origin of varieties of the Velvet Bean (*Stizolobium* sp.), also notes on culture and uses. The better known varieties discussed are Florida, Georgia or Early Speckled, Alabama or Medium Early Speckled, Chinese, Osecola, Yokohama and Lyon.—T. H. McHilton.

891. ANONYMOUS. The world supply of cereals. New Zealand Jour. Agric. 18: 248. 1919.—Gives a survey of the situation from the standpoint of estimates and forecasts based on information supplied by Sir J. Wilson, New Zealand representative in the International Institute of Agriculture of Rome.—E. R. Hodson.

892. McTAGGART, A. Means for increasing agricultural production in New Zealand. New Zealand Jour. of Agric. 18: 140. 1919.—Discusses well-known methods in their application to New Zealand conditions.—E. R. Hodson.

893. McTAGGART, A. Rotation of crops. New Zealand Jour. Agric. 18: 83. 1919.—Discusses the reasons and need for rotation and its advisability for New Zealand conditions.—E. R. Hodson.

894. DIBBLE, W. Forage crops. New Zealand Jour. Agric. 18: 169. 1919.—Discusses the kind of crops and methods of treatment for both summer and winter forage plants.—E. R. Hodson.

895. ANONYMOUS. Estimated yield of wheat and oat crops. New Zealand Jour. Agric. 18: 128. 1919.—Gives estimated yield of these crops for 1918-19 compiled by the Government statistician from reports furnished by the field inspectors of the Department of Agriculture.—E. R. Hodson.

896. ANONYMOUS. Lucerne experience. New Zealand Jour. Agric. 18: 213. 1919.—The article deals with soils and localities suitable to lucerne. Among the results noted are the experiments on pumice or volcanic ash from the eruption of 1886.—E. R. Hodson.

897. ANONYMOUS. Areas under principal crops. New Zealand Jour. Agric. 18: 53. 1919.—Gives in tabular form the areas under the principal arable crops in New Zealand at five year intervals since 1900; also tabular data on unimproved land and on tenure of occupied land.—E. R. Hodson.

898. MERCHAN, A. Informe sobre tratamiento electrico de semillas antes de la siembra. [Electric seed treatment.] Revist. Agric. Com. y Trah. 2: 199-201. 1919.—See Bot. Absts. 3, Entry 1251.

899. BARTHE, A. E. Cultivo industrial de la higuera. IV. La cria del gusano de seda del Ricino (*Attacus ricini* Boisduv.). [Castor bean as food for the castor silk-worm.] Revist. Agric. Com. y Trab. 2: 161-169. 3 pl., fig. 1-8. 1919.

900. ASTON, B. C. Improvement of poor pasture. New Zealand Jour. Agric. 18: 15-27. 1919.—After a brief review of the Cockle Park experiment, in England in 1896, on the Duke of Portland's estate near Morpeth, Northumberland, the author describes similar experiments in New Zealand where phosphorus produced considerable improvement in the carrying-capacity of the pasture. In 1917 on the Wallaceville Laboratory Farm an experiment on pasture treatment was undertaken, analyses of the soil made and seven lots laid off into five 1/2-acre plots and fenced. Finely ground Makatea Island rock phosphate containing about 85 per cent tricalcic phosphate applied at the rate of 5 cwt. per acre together with 3 tons of rather coarse limestone rejections from the Mauriceville quarry, produced the greatest amount of grass, while lime alone made a marked improvement over the control lot. In 1918, after six months grazing the control lot was carrying only 8 sheep, while the paddock receiving ground Maka-

tea Island phosphate and rough unground limestone was carrying 28 sheep and paddock No. 4 rough unground limestone 13 tons per acre carrying 20. The experiment is to be continued for several years.—*I. S. Cook.*

901. KOCH, GEORGE P. The Cultivation of medicinal plants. *Western Druggist* 41: 148-151. 1919.

902. KOCH, GEORGE P. The cultivation of medicinal plants. *Jour. Amer. Pharm. Assoc.* 8: 275-281. 1919.—See Bot. Absts. 3, Entry 1685.

903. CLAYTON, R. J. B. A memorandum on rice supplies. *Bull. Dept. Agric. Federated Malay States* 7: 15-27. 1919.—Rice supplies generally; the normal supply and consumption of Malaya; local rice position at present; the effect of the war on rice supplies to Malaya; rice war measures taken in four other countries; the conditions necessary for a large rice production, and rice milling locally are discussed in this article. Several deductions and recommendations relative to increased rice production for Malaya and its relation to the labor situation are given.—*J. T. Barrett.*

904. COCKayne, L. An economic investigation of the montane tussock-grassland. *New Zealand Jour. Agric.* 18: 1-9. 1919.—A sharp division line between the dense forest on the west side of the divide of the Southern Alps and the tussock grassland on the coast side is described by the author. The rainfall ends at the forest line and the eastern grassland contains no trees. Most parts of the tussock-grassland will not pasture one sheep to three acres. The montane tussock-grassland is made up of some 210 species of indigenous plants which belong to 39 families and 98 genera. The dominant species is the fescue-tussock (*Festuca novae-zealandiae*), while the silver-tussock (*Poa caespitosa*) dominates the lowland. Methods of improving the pasture land are described, such as burning, surface sowing, and cultivation.—*I. S. Cook.*

905. EATON, B. J. Lalang grass as a paper material. *Bull. Dept. Agric. Federated Malay States* 7: 28-32. 1919.—The value of lalang grass, *Imperata arundinacea*, as a paper making material is compared with Spanish and Algerian esparto grass. Experiments in pulping showed lalang grass to be inferior to the Spanish hut to compare favorably with the Algerian esparto grass. The investigations made indicate the need of information on available raw materials of raw material, especially lalang, and its cropping possibilities. A brief discussion of the world supply of paper producing materials is included.—*J. T. Barrett.*

906. HUNNICUTT, B. H. A forage plant from the Solanaceae family. *Jour. Heredity* 10: 185-187. *Fig. 14-15.* 1919.—Points out the possible value of *Solanum bullatum* and *Solanum grandiflorum*, natives of Brazil, as forage plants.—*M. J. Dorsey.*

907. PIENALLU, ANDRÉ. Sur le bouturage du Sorgho. [Growing sorghum from cuttings.] *Compt. Rend. Agric. France* 1919: 76-78. 1919.—By cutting canes into pieces 3 to 4 cm. long each side of a node and removing the sheath by a circular cut just above the node it was possible to grow sorghum from such cuttings. This is of advantage in multiplying desirable sorts without danger of cross pollination. The canes may be kept alive over winter if protected from the cold.—*E. A. Bessey.*

908. AYRES, W. E. A bad farm practice. *Arkansas Agric. Exp. Sta. Circ.* 47. 4 p., 1 pl. 1919.—The deterioration in the grade of cotton due to standing in the field is given for three standard varieties. The figures show that a small crop picked early gives better financial returns than a larger crop injured by weather.—*John A. Elliott.*

909. AYRES, W. E. Varieties of cotton. *Arkansas Agric. Exp. Sta. Bull.* 159. 16 p. 1919.—Results of tests of 109 varieties and strains in small plots; four regular tests of 25 standard varieties; and more extensive tests of 8 most promising varieties are given for the season of 1918. Fourteen tables show the comparative ranking of the varieties and strains in value of seed cotton and of lint per acre.—*John A. Elliott.*

910. AYRES, W. E. Cultural experiments with cotton. *Arkansas Agric. Exp. Sta. Bull.* 161. 16 p., 4 pl. 1919.—Results in value of seed cotton per acre are given to show the returns from various methods of handling cotton. The following methods are tabulated and compared: Check-row spacing; check-row vs. ordinary spacing; thinning vs. no thinning; number of plants per hill; distance between hills; width of rows; ridge vs. level planting; dates of planting; methods of cultivation; topping. The results are given for the season of 1918. The use of the double-row cultivator with the elimination of three-fourths of man labor gave promising results.—*John A. Elliott.*

911. TAYLOR, W. H. Bees and flower fertilization. *New Zealand Jour. Agric.* 18: 203. 1919.—Discusses the subject with reference to beans and peas.—*E. R. Hodson.*

912. KAJANUS, BIRGER. Über eine Kreuzung zwischen zwei Typen von Sommerweizen. [On the crossing of two types of spring-wheat.] *Bot. Notiser* 1918: 245-247. 1918.—See *Bot. Absts.* 3, Entry 1007.

913. WERNER, H. O. Grading legislation in Nebraska. *Potato Mag.* 1st: 24. 1919.—Describes bill which compels grading of potatoes produced in Nebraska.—*Donald Folsom.*

914. PROBASCO, C. B. Suggestions on marketing potatoes. *Potato Mag.* 1st: 11, 24. 1919.—Advocates fixed standards, growers' associations, and establishment of demand for specially marked packages.—*Donald Folsom.*

915. WHEELER, H. J. Fertilizers stimulate production in Maine. *Potato Mag.* 1st: 30. 1 fig. 1919.

916. CLINTON, G. P. Prematuring and wilting of potatoes. *Potato Mag.* 1st: 12-13, 24. 1919.—See *Bot. Absts.* 3, Entry 1162.

917. SANBORN, C. B. Oklahoma and certified seed. *Potato Mag.* 1st: 23. 1919.

918. MURPHY, P. A. Seed potato inspection service in Canada. *Potato Mag.* 1st: 8, 28, 31. 7 fig. 1919.—Describes methods and effects of inspection.—*Donald Folsom.*

919. BARRUE, M. F. Seed improvement and certification. *Potato Mag.* 1st: 10, 25, 34. 1 fig. 1919.—Discusses scope, methods, and results in the United States.—*Donald Folsom.*

920. CLARK, C. F. The potato industry in Colorado. *Potato Mag.* 1st: 8-9, 22; 1st: 14-15, 29. 8 fig. 1919.—Describes the various districts, the importance of the crop, variety choices, range of soils, rotation and other cultural methods, storage, pests and diseases.—*Donald Folsom.*

BOTANICAL EDUCATION

C. STUART GAGER, *Editor*

921. FAIRCHILD, DAVID. Present condition and opportunity of the American Genetic Association. *Jour. Heredity* 10: 65-67. 1919.—See *Bot. Absts.* 3, Entry 994.

922. WAKEMAN, NELLIE. Teaching plant chemistry. *Jour. Amer. Pharm. Assoc.* 8: 105-108. 1919.—Three lines of thought are presented, (1) the value of the subject; (2) materials for study; and (3) methods of presenting the subject. The paper deals with the methods of teaching plant chemistry at the University of Wisconsin.—*Anton Hogstad, Jr.*

923. TANGLEY, A. G. The reconstruction of elementary botanical teaching. *New Phytol.* 18: 108-110. 1919.—The editor closes the discussion begun in December, 1917. "The suggestion that the syllabus of an elementary course, on the lines indicated in the memorandum, should be drawn up and published has been made from several quarters. In accordance

with this suggestion a meeting of botanists known to be in sympathy with the ideas of the memorandum was held in London in January, and a small committee was appointed to compile such a syllabus."—*I. P. Lewis.*

924. LANTES, ADELAIÖA. Como se prepara un herbario. [How to prepare an herbarium.] *Revist. Agric. Com. y Trab.* 2: 285. 1 fig. 1919.

925. KING, CYRUS A. Changes in teaching botany in our high schools. *Torrey* 19: 66-71. 1919.—The present curriculum practically cuts off the bright pupils from taking botany. Insufficient time is given for the development of fundamental principles. The course should be more definitely organized. It should be made to assist in a better comprehension of life-processes, of the relation of biology to human welfare, and in developing citizenship. This can be better accomplished in the study of biology than in general science.—*J. C. Nelson.*

926. MANN, PAUL B. The relation of first-year botany to advanced work, with references to certain applications and by-products. *Torrey* 19: 72-78. 1919.—The contributions of first-year botany to advanced courses and later life are: (1) In offering an approach to rational sex-hygiene; (2) As a basis for general hygiene; (3) Working material for individual culture; (4) To insure intelligent citizenship; (5) To discover latent scientific talent.—*J. C. Nelson.*

927. HUGHES, FRANCIS T. Botany in the city high schools. *Torrey* 19: 57-65. 1919.—High-school botany is suffering from prejudice and the competition of other subjects. The solution is not hopeless if the subject is properly vitalized. We should teach botany from the pupil's environment. One complete object should be used as a starting-point. The tree is the most familiar and accessible object for the city pupil, and can be used to illustrate all the vital processes.—*J. C. Nelson.*

FOREST BOTANY AND FORESTRY

RAPHAEL ZON, *Editor*

928. ADKIN, B. W. Some very injurious beetles. *Quart Jour. Forest.* 13: 45-49. 1919.—Pine weevils, particularly the large brown pine weevil (*Hyllobius abietis*, L.), which devours the bark on the stems of young coniferous trees, and the pine beetle (*Myelophitus piniperda*, L.), which destroys the branches of pines, are generally regarded as being the most injurious beetles of coniferous woods and plantations in Great Britain. There are other injurious beetles which though not generally regarded as injurious are in fact quite as much so. These belong to the genus *Hylastes* and include five known British species; two of these are very rare, and may be disregarded; two others, *H. ater*, Payk., and *H. palliatus*, Er., are very common. The third species, *H. cunicularius*, Gyll., is said not to be common, but still has been proven quite so in Scotland. These three beetles are not much larger than one of the common ants. They spend their lives in places where but little is seen of them. The larvae of the first named feed under the bark of the roots of Scotch pine trees which have been recently felled, or which are dead or in eickly condition. The larvae of the second named feed under the bark of the roots of spruce trees. The larvae of the third feed under the bark of Scotch pine and also less frequently of spruce and larch.—*C. E. Tillotson.*

929. ANONYMOUS. Annual report of the forest department of the Union of South Africa for year ending March 31, 1918. 43 p. Cape Town, 1918.—This is the annual administrative report of the Department and covers a wide range of subjects in summarized form. The influence of the war is shown in bringing the urgency of the forest problem to public attention. It is pointed out that not much more than 5 per cent of the probable future requirements of the country for softwood (which comprises 90 per cent of the consumption) can be supplied even with the forests in a high state of productivity. Planting must therefore be undertaken on an extensive scale to make up the deficiency. It is planned to plant a total area of 300,000 acres and an additional fund of £50,000 was appropriated in 1918, to get the enlarged program under way.—*E. R. Hodson.*

930. ANONYMOUS. Casuarina woods in Mauritius. Agric. News [Barbados] 18: 5. Feb. 22, 1919.—This article consists of extracts from a letter of H. A. Tempany, Director of Agriculture, Mauritius. *Casuarina equisetifolia* L., locally known as "Filao," is extensively planted along the sea coast of Mauritius on the "Domaine publique" which consists of all of the land along the coast to a minimum depth of 81 metres. The trees form a useful shelter belt and produce a valuable supply of fuel. In the shade of the trees the West Indian grass (*Stenotaphrum glabrum* Trin.) known locally as "herbe bourrique" grows luxuriantly and is utilized for cattle pasturage.—C. V. Piper.

931. ANONYMOUS. Garden, field and forest. Jour. Bd. Agric. British Guiana 12: 37-44. 1919.—Descriptions and uses of the saman tree (*Pithecolobium saman*) and the cannon ball tree (*Couripita guianensis*).—J. B. Rorer.

932. ANONYMOUS. [W. N. SANDS.] The Mahoe cockon tree in relation to cotton stainer control in St. Vincent. Agric. News [Barbados] 18: 154-155. May 17, 1919.—The "Mahoe cockon" tree (*Sterculia caribaea* R. Br.) a breeding plant of the cotton stainer (*Dysdercus delanueyi* Leth.) is discussed with reference to the control of the insect.—C. V. Piper.

933. ANONYMOUS. [M., J. M.] A note on planting and sowing. Trans. Roy. Scottish Arboric. Soc. 33: 88-90. 1919.—This article takes up briefly the considerations which should govern the choice of sowing or planting in reforestation or afforestation operations.—C. R. Tillotson.

934. ANONYMOUS. Om gjelta og skogen. [Goat grazing and the forest.] Tidsskr. Skogbruk 27: 74-75. Mar.-Apr., 1919.—The goat is a common domestic animal on Norwegian mountain farms. If the animal is starved in winter it will devour large quantities of spruce and pine buds and new shoots when let out. Sometimes it gnaws the bark as well. The greatest damage is done by eating all the one-year seedlings it comes across. This is the choice dish and it does not pass them by if ever so full.—J. A. Larsen.

935. BEEBON, C. F. C. Food plants of [British] Indian forest insects. Part I. Indian Forester 45: 49-56. 1919.—An annotated list of Coleopterous species from India, of which the food-plants are known, with their distribution and feeding habits. The present paper lists 30 species with 89 records of host plants.—E. N. Munns.

936. BEEBON, C. F. C. Forest insect conditions in Gorakhpur Division [British India]. Indian Forester 45: 10-15. 1919.—A description is given of the borers, defoliators and insects destructive to young growth.—E. N. Munns.

937. BELL, FRANCIS. A forestry policy for New Zealand: Address by the Commissioner of State Forests. New Zealand Jour. Agric. 18: 313-318. 1919.—This office, recently separated from that of the Minister of Lands and not yet made a department, does not deal with private forest land although this may become part of its future work, especially in the purchase of private lands for state forests. It is advocated that sawmills be granted licenses only on the condition that no timber sawed at their mills shall be sold for export. Approximately 1,654,214 acres are in state forests of which 1,464,000 acres are actually under forest. These state forests include only lands so proclaimed under the State Forests Act. There is an urgent problem in Crown lands not yet proclaimed State forests because of the present demand for land for settlement. In accordance with the present policy where such land is good agricultural land it will not be withheld from clearing when needed by settlers. It has not yet been found possible to classify the forest and agricultural land but a system of proclaiming provisional State forests is being followed which it is hoped will prevent hasty action in settling land better adapted to forest purposes than to cultivation.—The commissioner has power to protect the forest-covered watersheds of streams to prevent floods in those non-navigable and to conserve a constant flow in those which are navigable. Regulations have limited the export of certain classes of timber and power has been taken to fix the prices of every class of milled timber in New Zealand. The sale of standing timber is prohibited, or

the grant of licenses to cut standing timber without the consent of the Governor-General in Council. These regulations, however, do not prevent any private owner from cutting or destroying the timber on his own land. There are two important administrative matters (1) the conservation of existing forest areas and (2) the planting of poor land now bare of forest. A recent act has given the power to raise £200,000 for afforestation purposes, none of which has yet been used. *Pinus insignis* is perhaps the most profitable species but may have to yield first place to Douglas fir. Kauri is valuable, as it grows on poor land. White pine is a valuable species but will disappear in time, as it grows only on land needed for cultivation. A report by D. E. Hutchins on New Zealand forests, is mentioned as about to be published.—E. R. Hodson.

938. BERZELIUS, JACOB. Om dyrkning af pil. [Willow culture.] Tidskr. Skogbruk 27: 58-65. Mar.-Apr., 1919. [Translation from Skogen, Swedish.]—Willows grown on wet ground generally produce coarse, brash wood with much pith. A finer quality of wood and more flexible reeds result when grown on drier ground. Good sites for willow culture are medium deep, moss or grass swamps, ditched if too wet. Even pure sand, somewhat firm, when not overlying gravel can be used. The presence of phosphoric acid and a small amount of potash is beneficial. Frosty sites should be avoided. The sod should be broken 40 to 50 cm. deep in fall, fertilized by mixing 300 kgm. of Thomas-phosphate and 700 kgm. of 37 per cent potash per hectare. On distinctly poor ground use 700 kgm. Chili saltpeter per hectare as dressing after the appearance of new vegetation. Cuttings should be secured in December or January, huddled and stored protected from drying out. Before setting out discard 40 cm. of the top and about 4 cm. of the bottom.—J. A. Larsen.

939. BOERKER, R. H. D. [Rev. of: GRIFFIN, A. A. Influence of forests upon the melting of snow in the Cascade range. Monthly Weather Rev. 46: 324-327. 3 figs., 4 tab. 1918.] Jour. Forestry 17: 47-50. 1919.—Studies in the United States in the last five years show that forests retain snow between two to three weeks after the snow in the open has disappeared, and that the snow waters are better absorbed in the soil under forest conditions than out in the open. Further studies are urged for the benefit of the irrigation interests, engineers and foresters that the public may better understand the forest relationships.—E. N. Munns.

940. BOYO, J. *Nectria cinnabarina* as a parasite. Quart. Jour. Forest. 13: 139. 1919.—See Bot. Abstr. 3, Entry 1626.

941. BROWN, W. BRUCE. Transport in relation to afforestation. Quart. Jour. Forest. 13: 93. 1919.—Discusses modes of transporting logs in logging operations.—C. R. Tillotson.

942. DEAM, CHARLES C. Trees of Indiana. Indiana State Bd. Forestry Bull. 3. 299 p., 153 pl. 1919.—A revised edition of the 1911 report of the State Board of Forestry, with corrections, additional notes and a new introductory chapter. Practically all the botanical drawings in the bulletin were made from the author's private herbarium of trees native to Indiana. He has carried on field investigations on tree distribution in the State during the last fifteen years. The bulletin is of especial value to those interested in the authentic distribution of trees in the United States, as it indicates all counties in the State in which each species occurs. All publications bearing on the distribution of trees in Indiana were consulted, but the author has used his field knowledge of the State in judging the correctness of all reported occurrences of the different species. In the introductory part is given a list and critical discussion of trees reported by various authorities as occurring in the State, but which the author is convinced do not occur at the present time, or never did occur as native. The list of species given as not occurring includes *Pinus rigida*, *Chamaecyparis thyoides*, *Populus balsamifera*, *Hicoria aquatica*, *H. myristiciformis*, *Castanea pumila*, *Quercus illicifolia*, *Q. nigra*, *Q. phellos*, *Planera aquatica*, *Ilex opaca*, *Acer pennsylvanicum*, *Nyssa aquatica*, *Halesia diptera* and *Frazinus caroliniana*.—The bulletin contains keys to families, genera and species. For each species a plate shows leaves, twigs and fruit, and a discussion is added about distinguishing botanical characters, importance, and range of the tree in the United States and

Indians, size and frequency of occurrence, distribution by counties in the State, the economic uses and horticultural value, and, in some cases, the best methods of planting.—There is also an interesting table of measurements on largest trees of some species occurring in the State. The author is preparing a book on the trees of Indiana.—*W. D. Sterrett.*

943. ELDEVIK, SÖREN. Løser det seg å plante skog? [Does it pay to plant trees?] Tidsskr. Skogbruk 27: 70-71. Mar.-Apr., 1919.—A plantation, made 1897-1900, now consisting of 1500 trees [evidently Norway spruce and Scotch pine], has yielded 5 per cent interest.—*J. A. Larsen.*

944. FERNOW, B. E. [Rev. of: ANONYMOUS. Report on white pine blister rust control, 1918. American Plant Pest Committee Bull. 2. 16 p. Boston, 1919.] Jour. Forestry 17: 325-326. 1919.—See Bot. Absta. 3, Entry 532.

945. FRITH, W. E. Result of felling on the Quinta Estate. Quart. Jour. Forest. 13: 140-141. 1919.—A short article giving the size and yield of eighty-year old trees of silver fir, spruce, Scotch pine and larch, which were felled on this estate.—*C. R. Tillotson.*

946. GRANT, JAMES. The destruction of young plantations by squirrels. Trans. Roy. Scottish Arboric. Soc. 33: 88. 1919.—A short letter calling attention to the damage by squirrels to young plantations after the older trees that were their accustomed place of refuge had been felled.—*C. R. Tillotson.*

947. GREYER, H. VON. Das hagel-, Ton-oder Mündholz. [The identification of the spruce (*Picea excelsa*, Lk.).] Schweiz. Zeitschr. Forstwesen 70: 86-89. 1919.—The great demand for forest products during the war led to a much closer utilization of inferior material than heretofore. In handling this material definite characteristics were noted in regard to the wood markings and structures. Wood from the Horn state forest showed an outer structure that was crenate. The notches were 0.5 to 2 mm. deep and 1 to 3 mm. long, arranged on the stem similarly to the cell structure on the interior. This crenate formation was never found at the center of the stem, nor in trees under 40 cm. in diameter breast high. The formation is always directly correlated with the medullary rays. In cross examination this crenate formation can be very distinctly noted in the annual rings, which show a wavy arrangement.—The technical properties of the spruce are more pronounced at higher elevations than at lower ones, although in other species the stunted growth and increased number of branches at higher altitudes decrease the technical value. No definite information was noted for the different exposures.—This article is illustrated by microscopic photographs of cross, tangential and longitudinal sections. Also the crenate formations on the outside are illustrated.—*J. V. Hofmann.*

948. HASLUND, OVE. Bestandskarter, arbeidskarter. [Stand maps.] Tidsskr. Skogbruk 27: 56-58. Mar.-Apr., 1919.—The author describes a convenient, but rough, method of mapping and tabulating stands for field use.—*J. A. Larsen.*

949. HEILBERG, G. F. Hassel-tøndebeand. [Hazel hoops for cooperage.] Tidsskr. Skogbruk 27: 65-67. Mar.-Apr., 1919.—Hazel sprouts of suitable sizes so as to allow splitting in two parts are extensively used for slack cooperage. Willows are also used but are not as good as hazel.—*J. A. Larsen.*

950. HOPKINSON, H. D. A note on the re-sowing of the pine areas in the forests of Brotonne and Rouvray. Trans. Roy. Scottish Arboric. Soc. 33: 69-70. 1919.—This is a short account of a sowing operation on a large area clear-cut by the British army during the war.—*C. R. Tillotson.*

951. JUDD, C. S. Report of the Superintendent of Forestry, Division of Forestry. Bd. Commissioners Agric. and For. Territory of Hawaii Rept. 1917-1918: 19-42. Pl. 2-5, maps 1-5. 1919.—This report covers the biennial period ending December 31, 1918. The main ac-

tivities of the Division were confined to protection and extension. The compelling reason for the practice of forestry in the Hawaiian Islands is the maintenance by forest influence of a steady supply of water for agriculture and domestic uses. The protection and rehabilitation of the forest, therefore, for its effect upon the water supply, rather than the exploitation of the forest for timber, have been the ends sought. The report sets out the details of this work; five maps showing the Forest Reserves of the islands add to its value.—*Stanley Coulter*.

952. KNUCHEL, H. Ergebnis der Bucheln- und Eichen-Ernte vom Jahre 1918 im Kanton Schaffhausen. [The yield of beech nuts and acorns, 1918, in the Canton Schaffhausen.] Schweiz. Zeitschr. Forstwesen 70: 86-89. 1919.—On September 5, 1918, the Swiss Domestic Department formed an agreement with the Department of the Interior to stock land with fruit and other forest trees. Arrangements were made to gather the fruit by school children or people of the local community.—The crop of acorns and nuts was very heavy and afforded employment for a large number of families in the forest communities. 25 centimes per kilogram was paid for gathering the acorns, and 1.10 francs per kilogram for beech nuts. A central organisation took care of all the nuts as they were gathered. On the whole, the arrangement proved very satisfactory.—*J. V. Hofmann*.

953. LESLIE, A. S. Note on the planting of poplars at Kininvie. Trans. Roy. Scottish Arboric. Soc. 33: 71-77. 1919.—This article discusses several kinds of poplar which are supposedly suitable for planting at Kininvie, the methods to be followed in planting and the rates of growth of the several species.—*C. R. Tillotson*.

954. LIZ, HAARON. Den stors ulvstiden. [The great wolf years.] Tidsskr. Skogbruk 27: 71-74. Mar.-Apr., 1919.—For several years after the Russian campaigns of Napoleon I, Norway seemed overrun by hordes of ravenous wolves. It is supposed that the wolves increased in numbers by feeding on the remains of the soldiers and when food gave out were forced to roam elsewhere. No bearing on their influence on the forests is stated, but rather an exciting account of how half a dozen animals attacked a man on a sled, who saved himself by inverting and crawling under a wine trough which he was hauling home.—*J. A. Larsen*.

955. MANGIN, VINCEY, HALLER, AND HENNEGUY. Le dépérissement des Épicéas dans la vallée de l'Arve (Châvds et Chamouls). [Discussion on death of spruces in the Arve valley.] Compt. Rend. Acad. Agric. France 1919: 113-115. 1919.—See Bot. Absts. 3, Entry 1179.

956. MAW, P. TRENTHAM. Government afforestation proposals. Quart. Jour. Forest. 13: 97-100. 1919.—Comments upon the final report of the Forestry Sub-committee of the Forestry Reconstruction Committee, 1918, with suggestions to land owners concerning the leasing of their lands.—*C. R. Tillotson*.

957. MILNE HOME, J. H. Preventive methods against attacks of the pine weevil. Trans. Roy. Scottish Arboric. Soc. 33: 81-82. 1919.—While other methods of protection against the pine weevil are often employed, the peeling of stumps which form the breeding-ground for the larvae of the weevil seldom receives attention. On two felling areas of 40 and 25 acres, respectively (places in Scotland), where there was reason to fear a serious attack on young plants that had been set out, the precaution was taken in the months of May and April, 1918, to strip the bark from the stumps of both Scotch pine and spruce. Very large numbers of larvae were found; many thousands being taken out and killed on the two areas. The damage done by weevils during the succeeding several months was negligible; the pest being entirely under control.—*C. R. Tillotson*.

958. MURRAY, A. Nature as the forester's guide. Trans. Roy. Scottish Arboric. Soc. 33: 59-63. 1919.—It is seldom that the practical forester or tree planter is capable of making a chemical analysis of the soil. Even if possible, it is doubtful if such an examination would form a reliable guide of the proper distribution of forest trees. The practical planter could, however, through observation of the natural existing vegetation, come to have an understand-

ing of the character and quality of the underlying soil. This, in connection with a knowledge of the requirements of the various species to be planted, will enable the forester to plant only those species which will find the soil and situation congenial to their growth. In Scotland, soils growing heather will generally be found most suitable for the growing of the Scotch pine. When, however, there are mixtures with other plants, such as *Potentilla tormentilla*, *Holcus lanatus*, several varieties of trees may succeed very well. The size of the plants will, moreover, form a guide as to the fertility of the soil. Foxgloves indicates a medium soil, inclined to be dry, and a great variety of trees may be grown in soil on which it flourishes. The most hopeless soil in its natural condition is that covered with species of *Scirpus*. Unless thoroughly drained, it is vain to expect any kind of tree to succeed on it.—C. R. Tillotson.

950. PEARSON, G. A. [Rev. of: ANONYMOUS. Meddelanden från Statens Skogsförsöksanstalt. [Contribution from the Swedish State Forest Experiment Station.] Häfte 15. 288 p. Stockholm, 1918.] Jour. Forestry 17: 431-436. 1919.—Seven papers are included with the administrative report, which deal with storm, insect and disease damage, tree-seed studies, direct seeding, and mensuration studies. The investigative program for 1918-1920 includes problems in forest regeneration, development of forest stands, studies in diseases and injuries, exotic species for forest practice, and soil investigations.—E. N. Munns.

960. REEVOELL-HOLMSEN, HANNA. Om betydning af lavdkksts hvide for foryngelsen i furuskog. [Influence of the height of undergrowth on Scotch pine reproduction.] Tidsskr. Skogbruk 27: 68-70. Mar.-Apr., 1919.—In summarizing her observations the author used local names for the plants; these species evidently differ from those appearing in most other regions.—J. A. Larsen.

961. RITZEMA BOE, J. De gevolgen van een fout bij het snoeien van laanboomen. [The results of an error in pruning shade trees.] Tijdschr. Plantens. 24 (Bijblad): 49-51. 1918.

962. STEWART, WILLIAM. History of the plantations on Shambellie Hill, near Dumfries. Trans. Roy. Scottish Arboric. Soc. 33: 40-43. 1919.—This is a letter from a forester addressed to the owner of an estate, in which the forester goes into some detail concerning the planting of both hardwoods and conifers on the estate, the yields and the returns from the plantations.—C. R. Tillotson.

963. TAYLOR, W. L. Succession in estate forestry. Quart. Jour. Forest. 13: 40-45. 1919.—This article touches briefly upon the natural changes in forest successions which have taken place in the past and are perhaps going on now, in their relation to the advisability of foresters bringing about a change in the species of trees grown on a particular site when the old crop is removed. Whether to replant with the same species or not depends on the health and vigor of the cleared crop at its maturity, and the probability of the same species proving financially the most promising for another rotation.—C. R. Tillotson.

964. TOUMEX, J. W. [Rev. of: (1) TRELEASE, WM. The ancient oaks of America. Mem. Brooklyn Bot. Gard. 1: 492-501. 1918. (2) INEM. Naming American hybrid oaks. Proc. Amer. Phil. Soc. 56: 44-52. 1917.] Jour. Forestry 17: 185-186. 1919.

965. WALKINGTON, ALMA. Plowing land before planting. Quart. Jour. Forest. 13: 133-136. 1919.—Plowing wet, heavy land, while expensive, and later planting it to forest trees, is preferable to pitting it in the fall and planting in the pits the following spring. Such pits remain wet and unsuitable for the growing of trees. Plowed furrows, on the other hand, have a natural drainage down the field. In planting the plowed land, a dibble can be used, this method being faster than digging a hole for each tree. The trees should not be set more deeply than they stood in the nursery.—C. R. Tillotson.

966. WHELLENB, W. H. Band saws v. circular saws. Trans. Roy. Scottish Arboric. Soc. 33: 86-87. 1919.—A short article dealing with the advantages of the band saw over the circular saw, particularly with large timbers.—C. R. Tillotson.

967. WHELLEN, W. H. Coppice standards. *Trans. Roy. Scottish Arboric Soc.* 33: gr. 88. 1919.—A short article in refutation of a statement to the effect that "standards in coppice were left for the express purpose of growing crooked timber for ship-building."—C. R. Tillotson.

968. WHITFORD, H. N., AND R. D. CRAIG. *Forests of British Columbia*. Rept. Comm. Conserv. Canada, Committee on Forests. 409 p. 23 pl., 31 maps. 1918.—This reports the results of three years work by the authors in securing personal knowledge of local conditions in each district and in compiling a large amount of data, including detailed estimates and reports on stands furnished by the British Columbia Forest Branch, timber owners, cruisers, surveyors and others. The forest land area of the province is placed at 149,344 square miles, as compared with 117,000 square miles in the Pacific Coast States of the United States, but the stand of merchantable timber in the former is estimated at only 366 billion board feet as compared with 1300 billion in the latter. The timber on two-thirds of the forest land area of the province has been totally destroyed by fire, and over half of the remainder has been seriously damaged, 200,000 square miles of the province is non-forest land, incapable of producing forests of commercial value. Over half the area of the province is unsuitable either for forestry or agriculture. About 145,000 square miles of this lie above altitudinal merchantable timber line and 55,000 below timber line with soil either too rocky or wet, or the forest so completely destroyed by fire that there is no hope for the natural re-establishment of forest conditions for centuries to come.—The Coast forests of the province comprise only 23,447 square miles of the forest land area, 11,362 square miles of which is merchantable timber with an average stand of about 30,000 board feet per acre; while the Interior forests comprise 125,897 square miles, 40,649 of which is merchantable forest with an average stand of about 5000 board feet per acre. The total stand of timber is estimated at about 230 billion feet in the Coast and 137 billion in the interior region. The forest land area comprises 36.5 per cent of the Coast region, 43.4 per cent of the Interior region and 42.2 per cent of the entire province.—The timber of the province is practically all soft-woods, containing the following estimated amounts and per cents:

SPECIES	COAST		INTERIOR		TOTAL	
	Million board feet	Per cent	Million board feet	Per cent	Million board feet	Per cent
Western red cedar.....	59,949	28.0	13,019	13.2	77,968	22.2
Douglas fir.....	63,400	29.6	12,019	9.2	75,973	21.7
Spruce (all species).....	14,165	6.7	58,899	43.1	73,064	20.8
Western hemlock.....	51,943	24.2	12,164	8.9	64,112	18.3
White fir (balsam).....	19,115	8.9	13,838	10.2	32,953	9.4
Lodgepole pine.....	68		11,793	8.6	11,861	3.4
Western yellow pine.....			4,208	3.1	4,208	1.2
Yellow cypress.....	4,056	1.9			4,056	1.1
Western larch.....			3,152	2.3	3,152	0.9
Western white pine.....	1,063	0.5	1,617	1.2	2,700	0.8
Cottonwood.....	516	0.2	272	0.2	788	0.2
Total saw material.....	214,300		136,535		350,835	
Piling, poles, pulpwood, etc.....	15,465				15,465	
Total forest resources.....	229,765		136,535		366,300	

The report analyzes in detail the timber and forest conditions, physical features and land classification, separately by regions, districts, and drainage basins. There are separate silvicultural descriptions of all the important species including character of occurrence, stand per acre, silvical characteristics and utilization, together with notes on insects attack-

ing British Columbia trees.—There are three interesting chapters dealing in broad aspects with the effect of geographical, physiological and climatic and soil relations on occurrence of forests and forest types, their economic importance and utilisation, and on forest fires.—The chapter on land tenure describes the salient features of the various forms of tenure, and their relationship to forest administration, including timber leases and timber sales. Chapters on forest administration on Provincial and Dominion Land describe the workings of forestry regulations and revenue secured on these two general classes of land.—A chapter on forest policy draws attention to a few points not sufficiently covered in preceding chapters, including the subjects of forest revenues, and of the need for scientific forest research and for a college of forestry.—A chapter of forest exploitation describes the development of the lumber industry in British Columbia, methods and costs of logging, amount of timber cut in various years, logging regulations and stumpage values. The largest reported lumber cut is for the year 1911, when 1342 million feet were cut. The State of Washington cut over 4000 million in the same year.—The report forms an encyclopedia of information on forest conditions and forest resources of British Columbia and gives an excellent basis for developing a permanent forest policy for the Province.—*W. D. Sterrett.*

960. WILSON, ERNEST HENRY. A summary report on the forests, forest trees, and afforestation in Chosen (Korea). *Trans. Roy. Scottish Arboric. Soc.* 33: 44-51. 1919.—The forests of Chosen are divisible into three groups: (1) Forests of conifers, (2) Forests of hardwood trees, (3) Mixed forests of conifers and hardwood trees. The softwoods include spruce, larch, fir, yew, pine and juniper; the hardwoods walnut, hirsch, oak, ash, chestnut, poplar, basswood, and some others.—Forests of Tohi, Chosen, Hari-momi, Toshirabe, Chosen-matsu, and Chosen Kara-matsu, mixed or more or less pure, cover vast areas on the mountains in the extreme north of Chosen. The Chosen Kara-matsu is found only on volcanic soils in north-eastern Chosen, and especially on the Chang-paisan range of mountains, where it covers large areas and forms extensive forests, often quite pure. The Aka-matsu (*Pinus densiflora*) is found from the extreme south to the extreme north of Chosen, mixed with hardwood trees or forming pure woods. The other softwood trees are widely scattered through Chosen. The remains of forests of hardwood trees occur here and there throughout the length and breadth of Chosen, but extensive forests of these trees grow chiefly on the mountains of the Unsan district, and on the coastal ranges of south and north Kankyo.—If properly conserved these forests are capable of supplying in perpetuity vast quantities of useful timber, and of being a perpetual source of national revenue.—Natural renewal of some of the forests may be effected if the seed trees are left in lumbering operations. This is the most simple and economical method in the hardwood forests and in some of the coniferous forests. It is claimed that regeneration of the forests of Chosen Kara-matsu (*Larix dahurica*, var. *Principis-Rupprechtii*) may be readily effected if the under growth be burned over some years before the forests are cut down. The planting of *Pinus densiflora* promises to be the most successful work in reforestation yet attempted in Chosen. This tree will grow on the most barren of soils. To reforest the vast areas of mountain land in Chosen, now covered with coarse grass and low shrubs, it is suggested that these be severely burned over and afterwards thickly sown with the seed of several species of hirsch and with larch, all mixed together.—*C. R. Tidjolsen.*

970. WOODWARD, KARL W. [Rev. of: HUFFEL, G. *Les ressources réalisables des forêts Allemandes.* [The available resources of German forests.] 16 p. Paris, 1918.] *Jour. Forestry* 17: 430-431. 1919.

GENETICS

GEORGE H. SHULL, *Editor*

971. ANONYMOUS. [Rev. of: WILLIAM BRIERLEY. An albino mutant of *Botrytis cinerea*. Given before the Linnaean Society.] *Jour. Bot.* 57: 135-136. 1919.

972. ANONYMOUS. Develops new hybrid cowpeas. *Jour. Heredity* 10: 175. April, 1919.—A brief report of the progress of the work with cowpeas of the United States Department of Agriculture, quoted from the Weekly News Letter.—*M. J. Dorsey.*

973. ANONYMOUS. (J. F.) Variability in plants. Gard. Chron. 65: 285-286. June 7, 1919.—Occurrence of three cotyledons amongst dicotyledonous plants is quite frequent, especially in *Fuchsia macrostema* where opposite leaves and three in a whorl may be found on the same plant. *Acer pseudoplatanus* quite frequently produces two, three and four cotyledons. Three cotyledons are followed by three leaves in a whorl.—Tuberous-rooted begonias show important botanical disturbances. The ovary is normally inferior and seed vessel closed, but double garden forms have been observed with ovary superior, valves of seed vessel transformed into petals and bearing the ovules or unfertilised seeds on their upper surface.—C. E. Myers.

974. ANONYMOUS. (J. F.) Variability in plants. Gard. Chron. 65: 321. June 28, 1919.—Has observed tricotyledonous and polycotyledonous seedlings in several species of normally dicotyledonous ornamentals. Holds that flower parts vary so widely in number that the plan of using the least common multiple as a basis of classification is impractical. [See Bot. Abstr. 3, Entries 1022, 1023.]—John Bushnell.

975. ANONYMOUS. (W. T.) Variability in plants. Gard. Chron. 65: 286. June 7, 1919.—States that seedlings with three cotyledons and leaves in whorls of three are not uncommon in *Fuchsia*; smaller branches of such plants may have leaves opposite. [See Bot. Abstr. 3, Entries 973, 1021.]—John Bushnell.

976. ARNT, A. C., AND H. K. HAYES. Experiments in field technique in plot tests. Jour. Agric. Res. 15: 261-262. 1918.—This is a study of the border effect in experimental field plots planted to various cereal crops, including wheat, oats, and barley, in 6-inch drill rows, with alleys between plots. Yields are compared, removing one border row and two border rows.—Border rows contribute a very marked increased yield per acre to the plots, the effect showing in a margin of at least one foot wide. Different varieties appear to respond differently to this border effect. The report is based upon the results of only a single season.—L. R. Smith.

977. BARTLETT, J. GARDNER. The increase, diffusion, and decline of the Mayflower and other New England stock. Jour. Heredity 10: 141-142. Fig. 30. Mar., 1919.—An article dealing statistically with the increase and diffusion of the Mayflower stock with reference to an article by S. J. Holmes and C. M. Doud, Jour. Heredity, November, 1918 [See Bot. Abstr. 2, Entry 414]. The author finds that the present conditions are not so desperate as pictured by the authors of the previous article, since statistics are given to show that there is a gradual increase in the Mayflower descendants.—M. J. Dorsey.

978. BAUR, ERWIN. Ueber eine eigentümliche mit absoluter Koppelung zusammenhängende Dominanzstörung. [On a peculiar disturbance in dominance associated with absolute coupling.] Ber. Deutsch. Bot. Ges. 36: 107-111. 1918.—If a certain external character depends upon two dominant factors, X and Y , the hybrid between the two races, of which the one contains X and the other Y usually will show this character. The writer finds in crosses with *Antirrhinum*, however, that, if the two factors in question show absolute coupling, the hybrid does not show the character, but presents the character caused by X alone on one part of the plant and that caused by Y alone in another part of the plant; thus a cross between striped and purple, expected to yield a red-flowered F_1 , gave striping on a purple ground.—T. J. Stompa.

979. BLAKESLEE, A. F. A unifoliate mutation in the Adzuki bean. Jour. Heredity 10: 153-155. Fig. 9. April, 1919.—In a population of over 450,000 plants of *Phaseolus angularis*, which is normally trifoliate, a single unifoliate plant appeared. It produced flower buds abundantly, but no flowers developed, the buds dropping at a stage before the petals were visible. The mutant was larger than others of its pedigree, was completely sterile, although buds were formed, and because it did not produce fruit, its vegetative functions were not checked and it held its leaves longer. Such a type has been observed once before in three individuals of *Phaseolus vulgaris*. This undivided leaf type is interesting since the plants of this genus so predominately bear compound leaves.—M. J. Dorsey.

980. BLAKESLEE, ALBERT F., AND B. T. AVERY, JR. Mutations in the Jimson weed. Jour. Heredity 10: 111-120. Fig. 5-16. Mar., 1919.—An article in which the authors name and describe several mutative variants of sudden, though rare occurrence which transmit their characters—chiefly through the female sex—to only a part of their offspring. One, particularly, designated N. S., proved nearly sterile with normal plants though it is self-fertile and breeds true.—M. J. Dorsey.

981. BRIDGES, CALVIN B. Vermilion-deficiency. Jour. Gen. Physiol. 1: 645-656. July 20, 1919.—A lethal sex ratio in *Drosophila melanogaster* was found to be due not to a simple mutation but to a deficiency (regional mutation or loss or "inactivation") of a portion of sex chromosome. Deficient region includes vermillion locus and flies carrying both vermillion and vermillion-deficiency look vermillion. It extends to the right of vermillion for a distance not exceeding three units. It includes also one or more loci to the left of vermillion because its lethal effect is not balanced by "vermillion sable duplication" which is an extra piece of chromosome carrying vermillion and several factors to its right. It is probable that there is no crossing over at all within the deficient region, that crossing over in adjacent regions is cut down markedly and in more distant regions is either unaffected or slightly increased. All these effects indicate a disturbed synepic relation. Cytological preparations of deficiency proved unsatisfactory. The stock was lost because of injurious action of deficiency on viability, fertility, and productivity.—Alexander Weinstein.

982. CALKINS, GARY N. Restoration of vitality through conjugation. Proc. Nation. Acad. Sci. [U. S. Amer.] 5: 95-102. Tables 1-3. 1919.—Neither the theory that conjugation restores vital activity to an optimum nor that it results in variations has been conclusively established. Calkins finds "that conjugation, in the ciliated protozoan *Uroleptus mobilis*, actually restores vitality to full metabolic vigor." Endomixis or asexual reorganization with restoration of vitality, occurs in *Uroleptus mobilis* while encysted, and was not allowed to take place in the five lines used in this work. These five lines were derived from the descendants of a single exconjugant at its third division. After 313 generations, during which vitality progressively decreased, the series died out. Specimens, not among those isolated daily, were allowed to conjugate and four filial series of these exconjugants were begun at the 78th, 147th, 237th, and 311th generations. The first of these died in the 348th generation; the second died in the 271st generation; and the third and fourth series were still dividing actively in the 277th and 236th. Four other series were started from these filial series. It was found that conjugation did not begin to take place until from 50 to 70 days from the start of the series. This is the period of sexual immaturity. Division rate indicates the degree of vitality and since the maximum division rate is restored by conjugation in specimens taken from the series at various stages in the decline of vitality the conclusion is reached "that conjugation results in the complete restoration of vitality regardless of the age or the weakened condition of the parent protoplasm, . . ."—R. W. Hegner.

983. COLLINS, G. N. A fossil ear of maize. Jour. Heredity 10: 170-172. Fig. 7. April, 1919.—Comment on a description by F. H. Knowlton of fossil ear of maize from Peru. While the fossil form is not identical with any of the existing types, it presents no new characters and therefore appears to be simply a different combination of characters.—M. J. Dorsey.

984. CONKLIN, ERWIN G. Heredity and democracy. A reply to Mr. Alleyne Ireland. Jour. Heredity 10: 161-164. 1919.—A reply to Ireland (Jour. Heredity 9: 339-342. 1918. [See also Bot. Absts. 3, Entry 261]) in which it is urged that there is no reason for the conclusion that heredity and democracy are incompetent. [See Bot. Absts. 3, Entries 1000, 1002.]—M. J. Dorsey.

985. COULTER, J. M. Evolution of maize. [Rev. of: WEATHERWAX, PAUL. The evolution of maize. Bull. Torrey Bot. Club 45: 309-342. Fig. 36. 1918.] Bot. Gas. 67: 104. Jan., 1919.—See Bot. Absts. 1, Entry 503.

986. COULTER, MERLE C. Chlorophyll inheritance. [Rev. of: IKENO, S. Studies on the hybrids of *Capsicum Annum*. II. On some variegated races. *Jour. Genetics* 6: 201-229. Pl. 8, figs. 1-8. 1917.] *Bot. Gaz.* 67: 95-98. Jan., 1919.

987. COULTER, MERLE C. Analysis of quantitative variation. [Rev. of: BROTHERTON, WILBER, AND H. H. BARTLETT. Cell measurement as an aid in the analysis of quantitative variation. *Amer. Jour. Bot.* 5: 192-206. 1918. (See *Bot. Absts.* 1, Entry 865.)] *Bot. Gaz.* 67: 100. Jan., 1919.

988. COULTER, MERLE C. Hybrid vigor. [Rev. of: JONES, D. F. The effects of breeding and cross-breeding upon development. *Connecticut Agric. Exp. Sta. Bull.* 207. 100 p., 18 pl. New Haven, 1918.] *Bot. Gaz.* 68: 150-151. Aug., 1919.

989. COULTER, MERLE C. A corn pollinator. *Bot. Gaz.* 68: 63-64. 1 fig. July, 1919.—For artificial pollination of corn an ordinary thistle tube is stoppered in such manner as to permit operator to blow through the apparatus. Pollen is placed in bulb and end of stem, bent at right angles, is inserted in a small aperture cut in end of protecting bag placed over silks. By blowing into apparatus, the pollen is thoroughly scattered through the mass of silks. End of the bag is then folded over, thus sealing aperture, the fold being made secure by a paper clip. Main advantage lies in possibility of applying pollen without necessity of exposing silks.—L. H. Smith.

990. DANFORTH, C. H. Evidence that germ cells are subject to selection on the basis of their genetic potentialities. *Jour. Exp. Zool.* 28: 385-412. July 5, 1919.—Breeding experiments with poultry demonstrate selective effect of inhalation of alcohol upon different types of germ cells. The alcoholized heterozygote—brachydactylous, polydactylous, white,—was mated to triple recessive,—normal, colored. Control consisted of eggs of same birds before and after period of treatment. Brachydactyly appeared in 39 per cent of controls, but in 48.2 per cent during period of treatment. Variations in controls were correlated with similar variations during alcoholization. Polydactyly showed no evidence of being affected unless treatment was very intensive. Dominant white was not affected. Idiosyncracies occur in gametic ratios under normal conditions;—as in brachydactyly, 39 per cent from heterozygote instead of 50 per cent.—P. W. Whiting.

991. DAVENPORT, C. B. [Rev. of CONKLIN, EDWIN GRANT. *Heredity and environment in the development of man*. 2nd ed., 860 p. Princeton University Press: Princeton, 1918.] *Mental Hygiene* 3: 324. April, 1919.—Points out that in the "matter of determinism and responsibility Conklin is inclined to take a middle ground," but suspects that the author's conclusions of this subject "are influenced by non-biological considerations." Reviewer thinks freedom is even more limited than Conklin cautiously concedes. Inhibitions can be cultivated if their germs are present, but not otherwise. "The capacity for inhibitions may be quite as automatic and as instinctive as the instinct itself."—G. H. Skull.

992. DAVIS, ROBERT L. Plant breeders' envelope. *Jour. Heredity* 10: 168-169. Fig. 8. April, 1919.—An illustrated description of an envelope, made of oiled paper, adapted to covering delicate flowers during hand-pollination.—M. J. Dorsey.

993. EOMONOR, M. E., AND P. SAROFANT. Variability in plants. *Gard. Chron.* 65: 299. June 14, 1919.—Note is made of *Fuchsia* plant which developed a shoot bearing three leaves at each node. Commentor notes that the variation is not particularly uncommon, nor of important biological or horticultural value. [See also *Bot. Absts.* 3, Entry 1021.]—C. E. Myers.

994. FAIRCHILD, DAVID. Present condition and opportunity of the American Genetic Association. *Jour. Heredity* 10: 65-67. 1919.—An address before the annual meeting of the American Genetic Association in which emphasis is placed upon the necessity of getting to the public mind a correct conception regarding the inheritance of acquired characters. It is pointed out that many important situations in the national life can be corrected in this way.—M. J. Dorsey.

995. FAIRCHILD, DAVID. Some present aspects of immigration. Jour. Heredity 10: 66-70. 1919.—A brief abstract of the Fourth Report of the Committee on Immigration of the American Genetic Association. Emphasis is placed upon the advisability of a more rigid rejection of those immigrants found to be mentally defective or diseased. Certain features of the new immigration law are pointed out which show that it is qualitatively selective rather than numerically restrictive.—*M. J. Dorsey.*

996. FREUD, SIGMUND. Three contributions to the theory of sex. 3d rev. ed., 117 p. Nerv. and Ment. Dis. Publ. Co.; Washington, D. C. 1918.—Book is mostly psychoanalysis of abnormal sexual phenomena in man with special reference to infancy and puberty. Brief references to source of aberrations attribute them chiefly to experiences, in some cases in lesser degree to heredity.—*A. Franklin Shull.*

997. GAGER, C. STUART. (Rev. of: MACFARLANE, JOHN MUIRHEAD. The causes and course of organic evolution. A study in bioenergetics. 875 p. Tbs Macmillan Co.; New York, 1918.] Torrey's 19: 93-101. 1919.

998. GOODSPEED, T. H., and PIRIE DAVIDSON. Controlled pollination in *Nicotiana*. Univ. California Publ. Bot. 5: 429-434. 1918.—In controlled pollination relative number of pollen grains to number of seeds produced through fertilization determined on six plants of *Nicotiana Langsdorffii* var. *grandiflora*. Few ovule fertilizations are sufficient to cause non-abscission of flowers.—*R. J. Garber.*

999. GOWEN, J. W. Inheritance studies of color and horn characteristics. Maine Agric. Exp. Sta. Bull. 272: 127-148. 4 fig. 1918.—Author presents preliminary report of cattle crosses involving Jersey, Guernsey, Ayrshire, Holstein-Friesian, and Aherdoen-Angus. Black is dominant to red and yellow (fawn). Appearance of a deep orange-coated animal from mating of first cross Aberdeen-Angus-Guernsey hull to Guernsey cow indicates that Guernsey breed carries recessive dilution factor. Pigmented muzzle is dominant to unpigmented, pigmented tongue is dominant to non-pigmented, and black switch seems to cause suppression of other switch colors. White markings of inguinal region seem to be dominant, while those of face, neck, shoulders, rump, flanks, and legs are probably recessive to coat wholly colored. That the polled condition is a simple dominant is questioned. Author suggests that male sex organs have some action on presence or absence of horns. In cross of beef and dairy types the F₁ showed beef type most in head and shoulder, while dairy type showed most in barrel and hindquarters. Study of milk and fat production indicates, according to the author, independent transmission in which high milk production is dominant to low and low percentage of fat dominant to high. Data are too few for definite conclusions.—*Elmer Roberts.*

1000. GRANT, MARION. Discussion of the article on democracy and heredity. Jour. Heredity 10: 164-165. 1919.—[A further discussion of Ireland's article, Jour. Heredity 9: 339-342. 1918. (See Bot. Absts. 3, Entry 261.)] emphasizing the value of heredity versus environment as a factor in determining social worth in individuals. [See Bot. Absts. 3, Entries 984, 1002.]—*M. J. Dorsey.*

1001. HALL, PRESCOTT F. Immigration restriction and world eugenics. Jour. Heredity 10: 125-127. Mar. 1919.—A discussion of the direct and indirect results of the immigration of foreign peoples of low standard into a country of high standard in relation to world eugenics. Such immigration does nothing but harm to the country receiving it, both biologically and physiologically, and by confinement and limitation in the country from which it comes would prevent the dilution of better stocks. Thus, by encouraging the fit and limiting or preventing the multiplication of the unfit the result is not merely a selfish benefit to the higher races but a good to the world as a whole.—*M. J. Dorsey.*

1002. HALL, PERSCOTT. Aristocracy and politics. Jour. Heredity 10: 166-168. 1919.—The last of the articles discussing the position of Ireland [See Bot. Abstrs. 3, Entry 261] on democracy and the accepted facts of heredity, in which the danger of government by the mediocre majority is pointed out. [See Bot. Abstrs. 3, Entries 984, 1000.]—M. J. Dorsey.

1003. HARLAND, S. C. Inheritance of certain characters in the cowpea (*Vigna sinensis*). Jour. Genetics 8: 101-132. 1 fig. Apr., 1919.—This paper reports studies on flower color, seedcoat pattern, and seedcoat color. Dark, pale, and white flower colors occur. Apparently satisfactory interpretations of numerical results are obtained by assuming pale flower color to be due to a factor *L*, effective (in production of pale color) only in Holstein and Small-eye types (see below). Another factor *D*, apparently identical with factor *W* (see below), converts pale into dark flower color. Validity of this interpretation depends on proof that white may be of two types, *UDD* and *Udd*, factor *D* being without effect on flower color except in presence of *L*. Studies on this point not concluded. Three "eye," or seedcoat pattern factors were found, *W*, *H*, and *H*₁, the two latter having identical effects but being independent in inheritance. Combination of *W* with either *H* or *H*₁ gives solid color. Absence of all three factors gives Small eye. *W* converts Small eye into Watson and Holstein into solid color. *H* converts Small eye into Holstein and Watson into solid color. The evidence for two Holstein factors is not considered entirely conclusive, but is very strong.—Representing solid color by *S*, Watson by *W*, Holstein by *H*, and Small eye by *SE*, the *F*₂ of crosses between Small eye and solid should give the unusual ratio 45*S*:3*W*:15*H*:1*SE*, and results confirm this.—Three factors affecting seedcoat color were found. Factor *B* converts brown seedcoat into black, and is responsible for dark red or purple tips on young pods, and for red in calyx and peduncles. Factor *M*, in absence of *N* gives maroon seedcoat, while *N*, in absence of *M*, gives light brown coat. *M* and *N* together give dark brown coat.—Types with white seeds and having flowers distinctly tinged with violet were found, as were also solid-colored types with white flowers.—W. J. Spillman.

1004. HARTMANN, MAX. Theoretische Bedeutung und Terminologie der Vererhungserscheinungen bei haploiden Organismen. (Chlamydomonas, Phycomyces, Honighiehe. [Theoretical significance and terminology of the phenomena of inheritance in haploid organisms. (Chlamydomonas, Phycomyces, honey bee.)] Zeitschr. indukt. Abstamm. Vererh. 20: 1-36 & fig. Sept., 1918.—Author tried in vain for three years to raise parthenogenetic progeny of *Bombyx mori*. He refers in detail to the work of (1) Pascher on the haploid progeny of a cross of two species of *Chlamydomonas* which differed in more than five characters; (2) Burgel who grew a haploid generation from a cross of two varieties of *Phycomyces*, showing segregation for sex as well as for the varietal difference; (3) Newell, who found haploid segregation among the drones of *Apis mellifica*. He prefers the substantive terms haploot and diplont for the two stages.—John Belling.

1005. HERTWIG, GÜNTHER. Kreuzungsversuche an Amphibien. [Hybridization studies on amphibians.] Arch. Mikrosk. Anat. 91: 203-271. 2 fig. Aug. 20, 1918.—The paper describes, in detail, experiments on hybridizing amphibians (species of *Rana*, *Bufo*, *Triton*, *Hyla* and *Pelobates*). In some cases, no results were obtained because of inability of sperm to enter egg. In others, polyspermy caused irregular cleavage and early death. The most successful cases are classified in several groups. Some crosses produced true hybrids (orthonothi) in which there was biparental inheritance. In others, the sperm nucleus took no part (pseudonothi). The true hybrids might develop fairly normally (tokonothi if fertile, steronothi if sterile), or they might become malformed and die early (dysnothi). In the present work, none of the hybrids were kept long enough to test fertility. With parthenogenetic development, the nuclei might be either haploid or diploid. In the former case, the volume of the nucleus was only half normal and the tadpoles were dwarfish. In the latter case, they developed like the maternal species as far as observed. Reciprocal crosses might

give very different results, even where both crosses could be made at all.—Previous treatment of the sperm with mesothorium radiation or with methylene blue in two cases changed the product of fertilization from the dysnothi to the pseudonothi. The author points out that the result of a cross depends not merely on the harmony between the two nuclei but also on the harmony between sperm nucleus and egg cytoplasm. The degree of relationship between species can not safely be determined by the results of hybridization.—*Sewall Wright*.

1006. JOHNSON, ROSWELL H. The determination of disputed parentage as a factor in reducing infant mortality. *Jour. Heredity* 10: 121-124. Mar., 1919.—The necessity of determining the parentage of a child under two years of age is pointed out, as it is below this age that greatest mortality occurs due to lack of support and court decision does not admit of physical resemblance because of immaturity. Methods which will lead to accurate results would reduce the number of illegitimate children and lead to better care of the child and hence reduce its mortality risk. Four such methods are discussed: (1) Alternative inheritance of many abnormalities, (2) More uniform application of the alternative inheritance of certain human traits, (3) Papillary ridges of the palm and sole, (4) Anthropometry. The latter can always be applied and errors eliminated by correction factors. The method is feasible and requires only a sufficient appropriation and an organization to carry on the work.—*M. J. Dorsey*.

1007. KAJANUS, BIRGER. Ueber eine Kreuzung zwischen zwei Typen von Sommerweizen. [On the crossing of two types of spring-wheat.] *Bot. Notiser* 1918: 245-247. Nov., 1918.—The varieties used were "Marzuolo americano" and what had been received from Svalöf, Sweden, under the name "Perl" spring-wheat. The crossing made was Perl ♀ × Marzuolo ♂. The Perl is unawned and has pale leaf-auricles, the Marzuolo is awned and has strongly red auricles. In the F₁ generation, the unawned condition of the Perl appeared to the awned in the ratio of about 3:1, and the strongly red color of the auricles of Marzuolo to the paler color as 3:1. In the F₂ generation all possible homozygous and heterozygous combinations of the two characters appeared, the ratio in the segregating families remaining about the same.—*P. A. Rydberg*.

1008. KEY, WILHELMINE E. Better American families. II. *Jour. Heredity* 10: 80-83. Feb., 1919.—An analysis of the setting of a defective family in society, showing that only a few individuals in a defective line of descent were able to respond to the customs and institutions of their day, but that others, better endowed from the standpoint of inheritance, were able through marriage into better stock and in some instances a change in the environment, to rise above the level of the others in the social fabric. See next following Entry, 1009.—*M. J. Dorsey*.

1009. KEY, WILHELMINE E. Better American families. III. *Jour. Heredity* 10: 107-110. Mar., 1919.—Showing that such traits or trait complexes as ability to calculate, aggressiveness, and perseverance have certain heritable elements which behave in accord with the principle of segregation. Percentages from data given support the following conclusions: (1) When both parents show low grade of ability, all the children are similarly of low grade, (2) When both parents show high grade, practically all the children are similarly endowed, (3) When one parent shows a low grade and the other a medium or high grade the increase in the percentage of medium and high is proportionate to the grade of the abler parent. Two instances from history are given in which an effective building up of trait combinations has occurred and the possibility is pointed out of more accurate ratings in studies of constructive eugenics through the tests of efficiency in the National Army. See next preceding Entry, 1008.—*M. J. Dorsey*.

1010. LANKESTER, SIR RAY. The terminology of parthenogenesis. *Quart. Jour. Microsc. Sci.* 63: 531-536. Apr., 1919.—"Parthenogenetic" applies only to virgin mother herself (not to offspring), and is limited in cases of either (1) normal egg capable of sexual zygosis, or (2) demonstrably a comparatively recent modification of such. These eggs, incorrectly

called parthenogenetic, are "autoblastic" or "lipospermic." Progeny are "impaternate" or "fatherless." "Virgo intacto" is any adult female not covered (most frogs are always such). Eggs fertilized after discharge are "planktogamic," fertilized within female "hystergamic," on surface of female "propylogamic." Female (already noted) bearing hystergamic eggs is a "conjunct," planktogamic or propylogamic a "virgin." Examples are given of use of these terms.—Merle C. Coulter.

1011. LURINCOTT, W. A. *The breed in poultry and pure breeding.* Jour. Heredity 10: 71-79. Fig. 10-18. Feb., 1919.—A brief statement is given of the significance of breed as used by poultry breeders, and the divisions into classes, breeds and varieties accepted in chickens, turkeys, ducks and geese. Emphasis is placed upon the fact that "appearance and not pedigree" is the criterion in poultry breeding. The appearance of an individual or of a breed is not regarded as an accurate index of its hereditary make-up. An instance is given in the case of one family of White Wyandottes, the members of which had repeatedly won prizes in the larger shows in which one breed possessed factors normal to other breeds. Single comb segregates have appeared in this family, and it was found by crossing several females with males carrying the black pigment, that this family also carried the factor which, acting on black pigment, renders it bluish gray as in the Blue Andalusian. These crosses also showed that this family possessed the sex-linked factor for barring as found in Barred Plymouth Rock and White Leghorn. The author suggests the probability that these characters have gotten into the germ plasma of this breed by crossing rather than being the appearance of ancestral characters, and postulates the possibility of a cross with a White Plymouth Rock.—M. J. Dorsey.

1012. LOVY, H. H., AND W. T. CRAIG. *The synthetic production of wild wheat forms.* Jour. Heredity 10: 51-64. 1 pl., 9 figs. Feb., 1919.—This article discusses the appearance of a type of wheat in certain crosses between a durum with a common wheat which "is similar in all respects to the typical wild wheat of Palestine," *Triticum dicoccum dicoccoides*, discussed previously by Körnicke, Aaronsohn and Cook. The synthetic type appeared in the F_1 of a cross between Early Red Chiel (*T. vulgare*) and Marouani (*T. durum*). The former variety is beardless, with smooth brown chaff and a red kernel and the latter, a typical durum form, has a smooth white or yellowish-white chaff and a yellow or yellowish-white kernel. Photographs are included showing the parents, the F_1 , and some of the F_2 and F_3 types. The types similar to the wild arose from two F_2 plants, No. 112 and 113, which possessed the brittle rachises, long basal hairs or bristles, long kernels which resembled the wild types and flat heads. The spikelets, however, were somewhat broader than the wild types. Seventy F_3 plants were grown of the No. 112 which segregated for various characters. In color of chaff, 52 were brown and 18 were white. Eighteen were awnless, 38 were intermediate and 14 were awned. All kernels were red, many were long like the wild types, and most plants produced heads with fragile rachises. Only 10 F_3 plants were obtained from No. 113, which in general behaved like No. 112. Some of the F_3 plants were tested further in the F_4 ; these were characterized by brittle rachises, red kernels and long basal bristles. Some of the pedigrees gave rise to plants in all respects similar to the wild. Seed from selected plants of the F_4 were again sown with the result that the F_5 was very similar to the F_4 . Some of the families in the F_4 , particularly two, were like the wild type in all of their characters. The offspring of 2030a1-112-7 were all classed as wild types which led the authors to state that, "there is no question of doubt but that types in every way similar to the wild wheat have been produced synthetically." Among the segregates of 112, it is of interest to note that reversed awns, which have never been observed in any other cross, were found in some types. In these cases the awn was borne on the empty glume and the beak on the flowering glume. Considerable data are also given of the inheritance of characters in the F_1 and F_2 of the cross from which plants 112 and 113 arose.—The evidence presented in this paper is of considerable interest from the standpoint of the prototype of the common wheats. The forms resembling the wild types so closely, appeared as segregates in crosses rather than by mutation, but this is not regarded as positive evidence that the wild wheats of Palestine are proto-

types of the common wheats, because these types might be expected to appear more commonly. The evidence suggests, rather, that the wild Palestine type might have arisen originally through a natural cross and therefore may be regarded as a contemporary form.—*M. J. Dorsey.*

1013. MACCAGHET, VAUGHAN. Race mixture in Hawaii. *Jour. Heredity* 10: 90-95. Feb., 1919.—The second article dealing statistically with the diversity of race intermarriages in Hawaii. [For first article, see *Bot. Absta.*, 3, Entry 269.] This paper presents data to show marriage combinations of Portuguese, Spanish, the native Hawaiians, Americans, British and Germans. In general, it was found that each nationality married largely within itself, but that in each there was great diversity in matings, although the numbers of matings with other nationalities were smaller.—*M. J. Dorsey.*

1014. MAONUSSON, H. Geschlechtslose Zwillinge. Eine gewöhnliche Form von Hermaphroditismus beim Rinde. [Sexless twins. A usual form of hermaphroditism in cattle.] *Arch. Anat. u. Physiol.* 1918: 29-62. 3 pt., 8 fig. 1918.—The principal interest of this contribution to the study of the intersexual condition of the female of two-sexed twins of cattle is the description of 11 cases of the author. The cases are not described very exhaustively but they contain valuable data on the anatomy of the free-martin, especially of some very extreme cases of transformation involving the external genitalia to an unusual extent. The material at the disposal of the author comprised 64 cases of "sexless heifers" found in the market. In 37 of these cases a clear history could be obtained; all were twin to a bull. He also had at his disposal one case of foetal two-sexed twins with a common chorion in which large branches of the umbilical vessels of the two foetuses were in direct communication; the ovaries of the mother showed two corpora lutea, one in each ovary. The author refers to a more complete publication in Swedish on this material; but does not give the reference.—The present paper includes some microscopical observations; the outstanding fact in this connection is the general testis-like character of the gonad;—the albuginea is similar to that of the testis; canals similar to seminiferous tubules frequently occur but lined only with a cubical epithelium in which no spermatogonia or later stages of spermatogenesis occur; there are usually inclusions similar in structure to the rete testis. No germinal epithelium ever occurred and no ovarian follicles. The gonad is similar in all cases to a hypoplastic testis. However, there is great variation in the individual cases.—All of the cases show a more or less pronounced male condition of the internal organs of reproduction; testes, vasa deferentia, seminal vesicles and sometimes prostate; of the female organs the ovary and oviduct never occur, the uterus is always much reduced, in many cases no larger than the uterus masculinus of the bull; the vagina is extremely reduced. On the other hand the external organs of reproduction and the udder are almost always distinctly female in character.—The author holds that the twins are monozygotic in spite of the cited fact that Tandler and Keller always found two corpora lutea for such twins (in 17 cases) and that he himself found the same condition in four cases of foetal twins. These facts are lightly disposed of. The author also holds that both twins are of the male sex in spite of the fact that this interpretation raises the percentage of same-sexed twins to 96 per cent instead of the expected 50 per cent. In his theoretical interpretation he leans towards Hart's theory, that in the hypothetical division of the assumed single male zygote to form twins the genital determinants are unequally divided so that the "potent" male characters go to one twin and the "impotent" to the other. The author, however, points out that this never happens in the case of the female zygote, and moreover that the "potent" twin of the free-martin is a normal male possessing the so-called impotent parts.—*P. R. Lillie.*

1015. MENDIOLA, NEMESIO BLANCO. Variation and selection within clonal lines of *Lemna minor*. *Genetics* 4: 151-182. 8 fig. Mar., 1919.—This is a study of clonal variation and the effect of selection on such variation in the duckweed, *Lemna minor*. The work reported extended over a period of one and one-half years and involved several thousand specimens. The usual method of reproduction in *Lemna* is budding. Within a wild population races were found to exist with fronds of diverse shape; no diversity was observed in the speed of

reproduction; but strains differing in size probably are present. Clones were reared on a nutrient medium modified from Pfeffer. Different shapes of fronds appear within a clone with one shape predominating, but these differences are not inherited, being probably merely somatic variations. A study of three fronds of unusual shapes proved these aberrant shapes also to be nonheritable. Selection for greater and lesser speed of reproduction within a clone was ineffectual. Plants grown in a nutrient solution were more variable in size than those grown in tap water, and fronds previously grown in nutrient solution produced offspring which were very much smaller than themselves; this decrease in size, however, was not inherited. Increase in size is also nonheritable. Four clones were used for the study of the effects of selection on size of frond, but no conclusive evidence that selection is effective was obtained.—R. W. Hegner.

1018. MORGAN, T. H., AND CALVIN B. BRIDGES. The inheritance of a fluctuating character. *Jour. Gen. Physiol.* 1: 639-643. 2 fig. July 20, 1919.—Selection of *Drosophila melanogaster* for more marked thorax pattern proved ineffective until suddenly a few darker individuals appeared. These were due to a mutation in third chromosome. Cross of mutant race with wild flies indicates that only a single factor difference is involved and that contamination of factors does not occur.—Another (still darker) race arose also by mutation from the original stock.—Alexander Weinstein.

1017. MURBECK, Sv. Über staminale Pseudapetale und deren Bedeutung für die Frage nach der Herkunft der Blütenkrone. [On staminal pseudapetaly and its significance for the problem of the origin of the corolla.] *Lunds Universitets Årskr.*, N. F. (Afd. 2.) 14: 1-59. 9 fig. Nov. 25, 1918.—Staminal pseudapetaly refers to apetaly where stamens occupy loci of petals. Author presents detailed studies of this condition in *Coleogyne*, *Cercocarpus* and *Nerium*, where in case of certain stamens position and innervation prove them to be transformed petals; with apetaly is associated non-entomophilous condition. Author briefly refers to over fifty other cases of pseudapetaly, the reference being in part based on Pensig's "Pflanzenanatomie." In some instances, as *Capsella*, *Verbascum* and *Solanum*, the pseudapetalous condition seems to have arisen suddenly and independently of environmental influences; in *Capsella* and *Verbascum* it is known to reappear in a portion of the descendants; several other cases, the method of whose origin is uncertain, show pseudapetaly to be "fixed."—J. P. Kelly.

1018. NORDSTEDT, C. T. O. [Swedish rev. of: HERBERT-NILSSON, N. Experimentelle Studien über Variabilität, Spaltung, Artbildung und Evolution in der Gattung *Salix*.] [Experimental studies on variability, segregation, speciation and evolution in the genus *Salix*.] *Lunds Universitets Årskr.* N. F. (Afd. 2.) 14: 1-145. 65 fig. 1918. Bot. Notiser 1919: 39-40. 1919.

1019. NORDSTEDT, C. T. O. [Swedish rev. of: ALMQUIST, E. Linne's Vererbungsfor-
schungen. (Linnaeus's investigations in inheritance.) Bot. Jahrb. 35: 1-18. 1917.] Bot.
Notiser 1918: 62-63. 1918.

1020. NORDSTEDT, C. T. O. [Swedish rev. of: JOHANNSEN, W. Ärtillgheten i historisk
och experimentell belysning. [Heredity in historical and experimental light.] viii + 327 p.,
58 fig. 1918.] Bot. Notiser 1918: 214. 1918.

1021. PAGE, E. JUDSON. Variability in plants. *Gard. Chron.* 65: 251. May 24, 1919.—
Observed a tricotyledonous *Fuchsia* seedling which continued to produce leaves in whorls of
three. [See also Bot. Absts. 3, Entries 973,975,993.]—John Bushnell.

1022. PAGE, E. JUDSON. Variability in plants. *Gard. Chron.* 66: 10. July 5, 1919.—
Extends the idea of the "least common multiple" to a "theory of intravolution" in attempt-
ing to account for variations within a species. Holds that a "composite creative principle"
determines the range of variability of a species, and that variations are due to an outcropping
of some latent element in this principle. [See Bot. Absts. 3, Entries 974,1023.]—John
Bushnell.

1023. PAGE, E. JUDSON. [Misprinted Sage.] Variability in plants. Gard. Chron. 63: 308. June 21, 1919.—Suggests that botanical classification should take into account the variability in leaf and flower part number; classifying on a basis of the least common multiple of the range of numbers rather than on the accepted basis of the numbers most frequently occurring. [See Bot. Absts. 3, Entries 974, 1022.]—John Bushnell.

1024. PASCHER, A. Ueber die Beziehung der Reduktionsteilung zur Mendelschen Spaltung. [The relation of the reduction division to Mendelian segregation.] Ber. Deutsch. Bot. Ges. 36: 163-168. 1918.—Apparently a recapitulation of a previous paper describing experiments with *Chlamydomonas*, considered here in the light of Mendelian theory.—John Belling.

1025. POMEROY, CARL S. Bud variations in sugar cane. Jour. Heredity 10: 129-135. Fig. 16-17. Mar., 1919.—An article indicating the importance of bud variations in sugar cane, together with their place of origin, type, and frequent occurrence. The difference between mother plants and sports is often as great as between recognized varieties. Bud variations have been recorded, as: (1) Differently colored side shoots from one cane, (2) differently colored canes in one stool growing from a single piece of planted cane, (3) A stalk with some joints striped and some unstriped, (4) Strains showing differences in hardness, (5) Strains showing differences in sugar content.—M. J. Dorsey.

1026. PUSCH, G. Inbreeding live stock. Jour. Heredity 10: 88-89. Feb., 1919.—An abstract of an article by two German workers, Toggengurg and Erzegebirge, in which it was shown that inferior animals were produced by excessive inbreeding in goats and sheep.—M. J. Dorsey.

1027. RAEMUSON, H. [Rev. of: DAHLGREN, K. V. O. Über einige Kreuzungsversuche mit *Chelidonium majus* L., *Polemonium coeruleum* L. and *Lactuca muralis* L. (On several crossing experiments with *Chelidonium majus* L., *Polemonium coeruleum* L., and *Lactuca muralis* L.) Svensk Bot. Tidskr. 12: 103-110. 1918.] Zeitschr. indukt. Abstamm. Vererb. 20: 302-303. April, 1919.

1028. REEN, H. S. Growth and variability in *Helianthus*. Amer. Jour. Bot. 6: 252-271. 5 fig. June, 1919.—Measurements on height of 58 plants of *Helianthus annuus* taken at intervals of seven days for a period of eighty-four days during the grand period of growth. Growth rate at first slow, maximum growth at about middle of grand period, after this decrease in rate with the beginning of flower-bud formation. Variability of height, as expressed by standard deviation and coefficient of variability was greatest at end of growing period. Plants were classed into four groups according to height when first measured. Showed tendency throughout to remain in initial groups, i.e., plants small in the beginning tended to remain small, those tall in the beginning tended to remain tall. Concludes that height and variability are not due to chance of environment alone, because there are large and consistent discrepancies between standard deviations of observed percentage values of position of plants in each of the four groups and standard deviation of mean percentages to be expected if heights of plants were distributed according to pure chance. Fourteen tables and three graphs are given. [See next following entry, 1029.]—Helene Boas Yampolsky.

1029. REEN, HOWARD S., AND R. H. HOLLAND. The growth rate of an annual plant *Helianthus*. Proc. Nation. Acad. Sci. [U. S. Amer.] 5: 135-144. Fig. 1-3, tables 1-3. 1919.—Measurements of height of 58 plants of *Helianthus* at seven-day intervals during the grand period of growth showed that growth rate approximated course of an autocatalytic reaction. Taken as indication that growth rate is governed by constant internal factors rather than by external factors, as temperature or transpiration with neither of which marked correlation was found. [See next preceding entry, 1028.]—Helene Boas Yampolsky.

1030. ROBERTS, H. F. The founders of the art of breeding. II. Jour. Heredity 10: 147-152. Fig. 1. April, 1919.—See also Bot. Absts. 3, Entry 65.

1031. SAND, K. Experimenteller Hermaphroditismus. [Experimental hermaphroditism.] *Pflügers Arch. Physiol.* 173: 1-7. 1918.—This is preliminary paper in which writer states briefly results of experiments on transplantation of gonads of rats and guinea-pigs. In the main, he confirms Steinach. By transplantation of testes into spayed female rats he obtained development of both somatic and psychic characters of the male to considerable extent. He succeeded in transplanting simultaneously an ovary and a testis into a castrated male guinea-pig, which became hermaphroditic both somatically and in behavior. Transplantation of ovaries into uncastrated males failed except in cases in which the ovary was inserted in middle of testis. This succeeded in both rats and guinea pigs. Female characteristics developed to some extent at least in latter. In both cases ripe follicles and corpora lutea were formed in contact with testicular tissue, which, in the rat, showed spermatogenesis. A theoretical explanation is attempted.—*Sewall Wright*.

1032. SARBENT, P. Variability in plants. *Gard. Chron.* 65:299. June 14, 1919.—Reports that *Fuchsia Riccartonia* and *F. pumila* not uncommonly have leaves in whorls of three. [See Bot. Abstr. 3, Entries 973, 975, 1021.]—*John Bushnell*.

1033. SAUNDERS, A. P. How to hybridize peonies. *Florists' Exch.* 48:187. Aug. 2, 1919. [Also *Bull. Peony News*, No. 8, May 19, 1919.]—Very popular account of the technique of hybridization, especially as applied to peonies.—*Orland E. White*.

1034. SCHACKE, MARTHA A. A chromosome difference between the sexes of *Sphaerocarpos texanus*. *Science* 49: 218-219. Feb. 28, 1919.—Eight chromosomes are found in the cells of both the male and the female gametophytes. The chromosome groups are alike as to seven of the eight chromosomes, which are rod-shaped, usually curved. The eighth chromosome in the female is longer and thicker than any of the other seven. The male does not possess this large chromosome, but has instead a very small one, commonly nearly spherical, and much smaller than any in the female.—*C. E. Allen*.

1035. SHEPPARD, W. J. Hermaphrodite bees. *Jour. Heredity* 10:160. April, 1919.—One hive of bees was found to throw out malformed bees for two successive seasons, 1917 and 1918. Thirteen distinct types were observed, such as a worker eye on one side, and a drone eye on the other, or perfectly formed drones as far as the petiole with the remainder of the body and the stinger like the worker. Others again were the reverse of this. These forms came from worker cells and were so capped that they could be recognized before they hatched. Five queens hatched from this colony and all perpetuated similar malformations.—*M. J. Dorsey*.

1036. SHULL, A. F. Environment and inherited characters in *Hydatina senta*. *Biol. Bull.* 34: 335-350. 1918.—Females living in water openly exposed to the air lay about 52 per cent of their eggs at the surface film, but those living in water exposed to an atmosphere containing an excess of oxygen, lay only about 25 per cent at the surface film. These latter females produce eggs that are slightly larger than the eggs which the females produce while living in water exposed to ordinary air.—The eggs laid in the water exposed to oxygen, hatch in a slightly shorter time and more uniformly than the other eggs under air conditions. More eggs are laid at the surface film at high temperatures than at low temperatures.—Fertilized eggs kept continuously at low temperatures, 2° to 12°C., above freezing, hatch better than those kept at room temperature. Those which do not hatch readily are not induced to hatch better by freezing. Cross-bred fertilized eggs hatch better than inbred ones when dried overnight and remoistened. Fewer inbred fertilized eggs hatched after being dried for four weeks than those dried for shorter periods.—*D. D. Whitney*.

1037. SOUTHWORTH, W. Twinning in alfalfa. *Jour. Heredity* 10: 182-183. Fig. 19-15. April, 1919.—Twin hybrids appeared in alfalfa crosses which were identical in appearance. The line of descent in which they appeared is as follows: The original cross between alfalfa and Black Medick was made in 1912. In 1913 an F₁ plant of this combination was crossed

with white clover as the pollen parent. From this last cross five F_1 plants were obtained, four of which produced seeds, the fifth being at first totally sterile, but when propagated vegetatively in 1914, about 20 plants were obtained most of them producing a small quantity of seed. Eleven plants were obtained from this seed and in 1917 two were pollinated with White Sweet Clover. Of the seven F_1 plants of this cross one bore 42 seeds, one of which produced the twin seedling illustrated. Two other twin plants were found in the progeny of the original cross but in a different line from the first one.—*M. J. Dorsey*.

1038. TERRY, J. R. A wingless Wyandotte. *Jour. Heredity* 10: 175. *Fig. 8*. April, 1919.—A pullet without wings and a cockerel without tail occurred in a flock of normal chicks. The pullet, mated to a normal male, has produced only normal chicks.—*M. J. Dorsey*.

1039. THOMPSON, J. W. Breeding milk goats. *Jour. Heredity* 10: 156-160. *Fig. 3-5*. April, 1919.—An argument for more general use of the goat as a source of milk, on the basis of quality of milk in nutrient elements and vitamins, greater hardiness, and ease and cheapness of keeping.—*M. J. Dorsey*.

1040. TISCHLER, G. Untersuchungen über den Riesenwuchs von *Phragmites communis* var. *pseudodonax*. [Investigation of the gigantic growth of *Phragmites communis* var. *pseudodonax*.] *Ber. Deutsch. Bot. Ges.* 36: 549-558. 1918.—The writer compared the cytology of *Phragmites communis* with that of its variety *pseudodonax*, a giant form. The number of chromosomes was the same in both cases, namely 30 (or 18 in the haploid phase), but in the giant type they were unmistakably larger than in the ordinary form. As in the giant form of *Primula sinensis*, the cells of the variety *pseudodonax* were in general larger than those of the ordinary *Phragmites communis*.—*Clara Fonteyn*.

1041. TIESBES, K., AND H. N. KOORMAN, Erfelijkheidsonderzoekingen bij bonen. [Genetical experiments with beans.] *Genetica* 1: 323-346. 1 colored pl. 1919.—The pink marbled Dwarf Prague bean is red-brown-striped on an ivory-colored ground. When crossed with a yellow bean (σ^2) of the type Non Plus Ulte, it gives in F_1 beans whose seedcoat is yellow-marbled on an ivory ground, and at the same time red-brown striped. The hybrid behaves in F_2 as a monohybrid, though the seedcoats of the parents differ in more than one character (color, spotting, taste).—A spontaneous hybrid from the yellow bean was blue-black-marbled on an ivory ground. It produced, in respect to the characters concerning the seedcoat, six phenotypes. The factors, which were present in the hybrid in a heterozygous condition, are the following: Z changes yellow to blue-black; V causes the marbling of the seedcoat. The phenotypes are these: Yellow, $zzvv$; yellow-marbled, $zzVv$; pink or violet marbled; $zzVV$; blue-black, $ZZvv$ or $Zzvv$; blue-black-marbled, $ZZVv$ or $ZzVv$; Blue-marbled, $ZZVV$ or $ZzVV$.—All the marbled ones have an ivory ground. In order to explain these facts, we accept, (relying upon some previous researches), that we may compare the factor V , in its effects, with a corrosive substance, and that its presence in a homozygous condition destroys the pigment more than when present in a heterozygous condition.—*H. N. Koorman*.

1042. VAN FLEET, W. New pillar rose. *Jour. Heredity* 10: 136-138. *Fig. 18-19*. Mar., 1919.—A description of the parents and W. S. 18, a seedling of the cross (*Rosa odorata* \times *R. wichuriana*) \times (*R. soulieana* \times *R. stigerana*). W. S. 18 combines many of the desirable qualities of all the parents and is especially recommended as a pillar rose. Many attractive seedlings, some of dwarf growth with double, bluish and white blooms borne throughout the growing season, have been secured.—*M. J. Dorsey*.

1043. VAN HERWERDEN, M. A. De terugkeer van een sedert zeven jaar verdwenen kenmerk in een cultuur van *Daphnia pulex*. [Reappearance of a character which had disappeared for seven years, in a culture of *Daphnia pulex*.] *Genetica* 1: 321-322. 1919.—In a culture of *Daphnia pulex* bred for 9 years in the laboratory a part of the partheogenetic young, leaving

the maternal brood-pouch, contained on the dorsal side of the shell in the heart region, 1, 2, or 3 little dents, which disappeared after the first ecdysis. The last time these dents had been noted was in the year 1911.—During the years 1911–1918 this character disappeared in the stock (cultures have been examined weekly), but in October 1918 a young *Daphnia* was born with an unmistakable ehitin dent, the progeny of this animal being dentless again.—The reappearance of this character after being lost for seven years proves that although this phenotypic character has disappeared, the genotypic constitution of these laboratory-bred animals had undergone no change.—*M. A. van Herwerden.*

1044. VAN HERWERDEN, M. A. De invloed van radiumstralen op de ontwikkeling der eieren van *Daphnia pulex*. [Effects of the rays of radium on the oogenesis of *Daphnia pulex*.] *Genetica* 1: 305–320. July, 1919.—Dutch version of a paper on the same subject published in *Verh. Kon. Akad. Wet. Amsterdam* 20: 1918.—See Bot. Abstr. 2, Entry 961.—*G. H. Shull.*

1045. WEATHERWAX, PAUL. The ancestry of maize—a reply to criticism. *Bull. Torrey Bot. Club* 46: 275–278. July, 1919.—Refutation of hypothesis advanced by J. H. KEMPTON AND G. N. COLLINS regarding hybrid origin of maize. Author believes development by gradual evolution better explanation.—*R. J. Garber.*

1046. WHITING, P. W. Two striking color variations in the green frog. *Jour. Heredity* 10: 127–128. Mar., 1919.—The many variations in color of the green frog, *Rana clamitans* Latrille, are explained by Mary C. Dickerson in *The Frog Book*. Green color is produced as the result of black and yellow pigments and a structure, the so-called interference layer, which is a single layer of polygonal cells between the epidermis and black pigment. These cells contain the yellow pigment, but if they were empty the black pigment would be seen through them,—making the color blue, due to the absorption of the longer light rays. When the interference cells contain yellow, the blue is seen through the yellow and the result is green. Changes in color are due to the expansion or contraction of the black pigment which presses close to the interference layer, thus diminishing the density and giving a brown color and *vice versa*.—Two color variations have been noted; one in which the yellow pigment was entirely lacking and the black reduced to a very light sepia, the skin appearing creamy white. This variation is apparently comparable to that described by Haecker in the tiger salamander. The other variation was a young frog lacking black pigment entirely, the skin being a clear light yellow, the iris clear gold, the pupil pink. These phenomena may be explained, employing Sewall Wright's theory of two enzymes for color inheritance in mammals, by extending it to amphibia.—*M. J. Dorsey.*

1047. WONNS, F. A. Good qualities are correlated. *Jour. Heredity* 10: 84–86. Feb., 1919.—A review of the evidence tending to show that individuals which possess rare and desirable qualities in one line are also capable in other lines. The importance of this conception is emphasized in view of the fact that some writers have held that there is considerable uncertainty of success in attempting selection within a race, if when there is improvement in one direction there is retrogression in another.—*M. J. Dorsey.*

1048. WORSHAM, E. LEE. Twentieth annual report of the State Entomologist for 1917. Georgia State Bd. Entomol. Bull. 51. 44 p., 1 pl., 2 fig., 1 map. 1919. [See Bot. Abstr., Entry 378.] Tests of a number of varieties of cotton, with respect to their yield, length of fiber, resistance to wilt, and earliness of maturity are described. Some of the varieties are named and the results tabulated.—*A. Franklin Shull.*

HORTICULTURE.

J. H. GOURLEY, Editor

1049. ADDIS, JOSÉ M. Una verdura saludable: la acedera. [Sorrel, a healthful vegetable.] *Revist. Agric. Com. y Trab.* 2: 281. 1 fig. 1919.

1050. ANONYMOUS. Revised compatibility chart of insecticides and fungicides. *New Zealand Jour. Agric.* 18: 39-40. 1919.—See Bot. Absts. 3, Entry 1148.

1051. ANONYMOUS. The home orchard. *New Zealand Jour. Agric.* 18: 40-44. 1919.—Brief recommendations regarding sprays, spray pumps, and time and method of applications. Special instructions are given for codlin-moth, scale insects, woolly aphis, red mite, and fungus blights.—N. J. Giddings.

1052. ARCANOEI, GIOVANNI. Altre osservazioni sulle varietà *Lycopersicum* e costata del "Diospyros Kaki." [Further observations on the varieties *Lycopersicum* and costata of the "Diospyros Kaki."] *Bull. R. Soc. Toscana Orticult.* 4: 24-29. 1919.—Notes on two varieties of *Diospyros Kaki* (*Lycopersicum* and costata), with especial reference to the falling of the partially developed fruits. [See also following entry, 1053.]—W. H. Chandler.

1053. ARCANOEI, GIOVANNI. Altre osservazioni sulle varietà *Lycopersicum* e costata del "Diospyros Kaki." [Further observations on the varieties *Lycopersicum* and costata of the *Diospyros Kaki*.] *Bull. R. Soc. Toscana Orticult.* 4: 45-49. 1919.—Two persimmons were left in water from November 10 to March 10 and the fungus that appeared was described without specific determination; and two were placed for an equal length of time in strong sodium chloride solution and their behavior noted. There are also further notes on the behavior of the two varieties of *Diospyros Kaki*. [See also preceding entry, 1052.]—W. H. Chandler.

1054. BARTHE, A. E. Cultivo industrial de la higuera.—II. Explotacion Industrial.—Extraccion del aceite. [Castor bean, machinery used and methods of extracting oil.] *Revist. Agric. Com. y Trab.* 2: 13-24. 14 fig. 1919.—The content of oil of different varieties is discussed. The machinery used and the methods of extraction, clarifying and purifying oil in different countries are described with critical comments. The uses of the oil and chemical and physical properties are described as also those of various by-products. In appendix A, the geometrical arrangements possible of the plants in the field are discussed.—F. M. Blodgett.

1055. BEAN, W. J. *Malus rivularis*. *Curtis Bot. Mag.* 15: Pl. 8788 (colored). 1919.—See Bot. Absts. 3, Entry 2311.

1056. BOCHER, M. H. Les jardins portagers scolaires en 1917. [School vegetable gardens in 1917.] *Compt. Rend. Acad. Agric. France* 3: 1086-1091. 1917.—A succinct statement of the work accomplished by boys and girls in growing vegetables on waste land and in helping to relieve the shortage of labor. It is estimated that these workers harvested a minimum of 500,000 kilos. potatoes and not less than this quantity of beans, cabbage, carrots, and turnips.—O. Butler.

1057. BRANN, F. R. Factors concerning the drop of immature citrus fruit in central California. *Monthly Bull. Comm. Hort. California* 2: 74-75. 1919.—Two distinct "drops" occur during the early development of citrus fruits; the first, known as the "natural slough," which occurs when the fruit is first formed in April, is of greater economic importance, and the "June drop," which occurs when the fruits are about the size of hazelnuts. The stem is dropped with the fruit during the "natural slough" and retained by the tree during the "June drop." The factors which are largely responsible for the "natural slough" are: (1) Excessive transpiration of moisture. (2) Plowing and deep cultivation during the spring.

Avoid plowing between March 1st and June 15th, to prevent injury to root systems when trees are making maximum growth. Plow, instead, during October to February. (3) Improper moisture content of soil by incorrect irrigation methods, especially during April, May or June. (4) Improper drainage and subsoil conditions. (5) Insect pests. Four insects primarily responsible are given. The "June drop" is due to one direct cause—citrus fungus (*Alternaria citri*). To reduce the development of this fungus, adopt clean culture during winter, keep trees pruned properly and permit no decayed oranges to remain in the grove.—E. L. Overholser.

1058. CALVINO, MARIO. El pimiento sarmentoso del Peru. [The climbing pepper of Peru.] *Revist. Agric. Com. y Trab.* 2: 61. 1 fig. 1919.—The clinging pepper of Peru (*Capsicum pubescens*) is described as one with notable vigor, a heavy producer and probably useful for hybridization with the Chili pepper. A technical description is given.—F. M. Blodgett.

1059. CALVINO, MARIO. Resena general sobre la aboricultura frutal de Mexico. [Mexican Horticulture.] *Revist. Agric. Com. y Treb.* 2: 252-258. 14 fig. 1919.—The different climatic zones of Mexico are outlined and the more important fruits in each are described with particular reference to history, habit of growth, and character and commercial value of the fruit.—F. M. Blodgett.

1060. CALVINO, MARIO. Alta horticultura, Las inyecciones interorganicas en las plantas. [Inorganic injections in plants.] *Revist. Agric. Com. y Trnb.* 2: 287-288. 7 fig. 1919.—Experiments previously reported in Bull. 75 and 79 of the Estacion Agricole Central de Mexico are reviewed and the starting of similar tests in Cuba is described.—F. M. Blodgett.

1061. CUSHMAN, ALLERTON S. Growing medicinal plants in America. *Jour. Heredity* 10: 32-38. Fig. 1-5. 1919.—A reprint from a previous article in which the author deals with the botanical source of many drugs, and the limitations, difficulties, and conditions encountered by a group of workers whose purpose it was to demonstrate that American methods were capable of making us independent of Central Europe with respect to some very necessary medicinals.—M. J. Dorsey.

1062. DAVIS, W. E., JR. Some lime-loving alpiners. *Garden Mag.* 29: 21. 1919.—Alpine plants are divided into three sections: (1) those whose cultures demand that there be lime in the soil in which they grow, known as lime-loving alpiners; (2) those which do not make this requirement; and (3) those which protest against any soil of a calcareous nature. It is pointed out that the formation of a considerable portion of the Alps is limestone and that plants coming from these formations should have a similar habitat when planted elsewhere. Then follows a discussion of the application of this to plantings of Alpine plants, with a long list of those classed as lime-loving species.—H. C. Thompson.

1063. EAM, GORDON. Tests with unfruitful plum trees. *New Zealand Jour. Agric.* 18: 162. 1919.—Reports are results of experiments in cross-pollination combined with pruning.—E. R. Hodson.

1064. FAIRCHILD, DAVID. Testing new foods. *Jour. Heredity* 10: 17-28. Fig. 1-5. 1919.—A discussion of the methods and practices necessary in finding and testing new foods together with the difficulties encountered in introducing them on domestic markets.—M. J. Dorsey.

1065. FARRINGTON, E. I. The worlds best for our own gardens. *Garden Mag.* 29: 13. Feb., 1919.—Contains information on a number of introduced trees and shrubs found in nurseries.—H. C. Thompson.

1066. HECKE, G. H., J. E. RICKARDS, E. E. KAUFMAN, AND R. G. FISHER. California crop distribution and estimates, 1918.—A bulletin dealing with the acreage, distribution, tonnage and evaluation of commercial fruit and vegetable crops in California. Monthly Bull. Comm. Hortie. California 4: 143-225. Fig. 63-83. 1919.

1067. HEMMI, FUMIWO. On the carbohydrates of the edible tubers of Japan. Jour. Coll. Agric. Hokkaido Imp. Univ. 8: 33-76. 1919.—See Bot. Absts. 3, Entry 1219.

1068. HUTCHINSON, J. *Primula bellidifolia*. Curtis Bot. Mag. 15: Pl. 8801 (colored). 1919.—See Bot. Absts. 3, Entry 2263.

1069. HUTCHINSON, J. *Rhododendron oleifolium*. Curtis Bot. Mag. 15: Pl. 8808 (colored). 1919.—See Bot. Absts. 3, Entry 2264.

1070. HUTCHINSON, J. *Desmodium cinerascens*. Curtis Bot. Mag. 15: Pl. 8806 (colored). 1919.—See Bot. Absts. 3, Entry 2265.

1071. JUMELLE, H. Sur la culture, a Marseille, de diverses varietes de ricin. [Varietal tests at Marseilles with castor bean.] Compt. Rend. Acad. Agric. France 1919: 45-47. 1919.—Twenty-three varieties of castor bean were grown at the botanical gardens in Marseilles of which twelve matured their seeds, including all the sorts from Senegal and two Indian sorts. The Brazilian sorts mostly did not mature.—E. A. Bessey.

1072. LINDET. Sur l'utilisation des sarments de vigne, des pépins et des marcs de raisins. [The utilization of grape shoots, seeds, etc.] Compt. Rend. Acad. Agric. France 1919: 156-157. 1919.—Reports investigations of Dr. Ventre on the development of alcohol to the extent of 1.25 to 2.05 per cent in grape shoots placed in the still, by intracellular fermentation, not by action of yeasts. On distillation 6 per cent of the product is amyl alcohol. The shoots also contain 1.4 to 1.5 per cent of tartaric acid.—E. A. Bessey.

1073. LINDET. Sur la fabrication de l'huile de palme neutre. [Method of producing neutral palm oil.] Compt. Rend. Acad. Agric. France 1919: 158-159. 1919.—Common palm oil is rancid and very acid due to permitting the fruits to become over-ripe. By picking them just before maturity and boiling immediately in water the oil obtained contains only 0.2 per cent acid and can be used for food purposes.—E. A. Bessey.

1074. MCCLELLAND, T. B. Vanilla: a promising new crop for Porto Rico. Porto Rico Agric. Exp. Sta. Bull. 26. 32 p. Pl. 1-3, fig. 1-4. 1919.—Vanilla (*Vanilla planifolia*) has never been grown commercially in Porto Rico although conditions are admirably adapted for its production. Experimental plantings have yielded at the rate of \$400 per acre in the fourth year, and \$700 to \$900 in the fifth (\$2 to \$4 per pound). In starting a vanillery it is necessary to plant trees to support the vines for which the leguminous dwarf bucaré (*Erythrina corallodendron*) is well adapted. A leaf mulch is very desirable. Long cuttings are preferable to short ones. Hand pollination of vanilla is necessary, but the number of blossoms pollinated has a direct effect on the size of the beans; pollination of a large number of blossoms means the production of short inferior beans. Vanilla culture, because of the small bulk and imperishability of the finished product, is recommended for districts remote from good roads.—John A. Stevenson.

1075. MCHATTON, T. H., J. W. FIROR AND R. E. BLACKBURN. Growing tomatoes in Georgia. Georgia State Coll. Agric. Bull. (Reprint) 145. 12 p., fig. 1. May, 1919.—Considers varieties, culture, soil, preparation, spraying, harvesting and fertilization. In discussing fertilizer problems, it is concluded that phosphorus is by far the most important single element in tomato (*Lycopersicon esculentum*) fertilization in south Georgia. Phosphorus in connection with stable manure proved to be the most economical fertilizer. Some of the fertilizer tests led to the conclusion that too much nitrogen might be injurious to tomatoes.—T. H. McHutton.

1076. MELLER, C. L. A plant for sun and sand. *Garden Mag.* 29: 15. Feb., 1919.—Wild Bergamot (*Monarda fistulosa*) claimed to be valuable plant for sandy, sunny locations.—H. C. Thompson.

1077. MELLER, C. L. Contriving for flowers in the shade. *Garden Mag.* 29: 17. Feb., 1919.—Mentions ornamental plants that thrive in dense shade and others that do well in partial shade.—H. C. Thompson.

1078. PANDOCK, E. H. Bridge-grafting on Citrus. *Monthly Bull. Comm. Hortic. California* 2: 72-73. 1919.—Bridge-grafting may be performed on citrus trees as well as on deciduous trees. Seedlings of the sour stock (*Citrus Aurantium*) about $\frac{3}{8}$ inch in diameter were used for the scion wood. The methods employed were those commonly used with deciduous fruits, except that the entire section bridge grafted was wrapped with canvas or burlap to prevent sudden changes of temperature and to lessen the loss of moisture.—E. L. Overholser.

1079. PUGGI, ANGIOLO. Le rose scempie. [Single roses]. *Bull. R. Soc. Toscana Orticult.* 4: 49-50. 1919.—Popular statement of value of single roses and brief description of seven choice varieties.—W. H. Chandler.

1080. RAGHONIERI, ATTILIO. La "Poinsettia (Euphorbia) pulcherrima" futura rivale del Crisantemo. [The "Poinsettia (Euphorbia) pulcherrima" future rival of the chrysanthemum.] *Bull. R. Soc. Toscana Orticult.* 4: 29-33. 1919.—Description and advice as to culture and improvement of "Poinsettia (Euphorbia) pulcherrima."—W. H. Chandler.

1081. REYES, ANDRÉS L. Nuevo procedimiento para aumentar el desarrollo de las partes foliares en algunas hortalizas, según el Dr. Mario Calvino. [Method of increasing the development of foliage of some vegetables.] *Revist. Agric. Com. y Trab.* 2: 286. 3 fig. 1919.—Confirms the conclusion of Calvino, that slits in the roots of some vegetables, as chicory, lettuce and parsley, cause a greater development of tops.—F. M. Blodgett.

1082. ROLFE, R. A. *Wittia Panamensis*. *Curtis Bot. Mag.* 15: Pl. 8799 (colored). 1919.—See Bot. Absts. 3, Entry 2284.

1083. ROLFE, R. A. *Liparis macracantha*. *Curtis Bot. Mag.* 15: Pl. 8797 (colored). 1919.—See Bot. Absts. 3, Entry 2283.

1084. ROLFE, R. A. *Calanthe tricarinata*. *Curtis Bot. Mag.* 15: Pl. 8803 (colored). 1919.—See Bot. Absts. 3, Entry 2285.

1085. SKAN, S. A. *Ipomoea Pes-tigridis* var. *longibracteata*. *Curtis Bot. Mag.* 15: Pl. 8806 (colored). 1919.—See Bot. Absts. 3, Entry 2291.

1086. TAYLOR, W. H. Propagation of plants. *New Zealand Jour. Agric.* 18: 93. 1919.—Discusses methods in regard to cuttings generally and illustrates the details by application of the methods to well known plants.—E. R. Hodson.

1087. TAYLOR, W. H. Shelter belts. *New Zealand Jour. Agric.* 18: 165. 1919.—See Bot. Absts. 3, Entry 577.

1088. TAYLOR, W. H. The Cape gooseberry. *New Zealand Jour. Agric.* 18: 220. 1919.—Methods of culture are given for this plant (*Physalis edulis*).—E. R. Hodson.

1089. TURRILL, W. B. *Lonicera similis*, var. *Delavayi*. *Curtis Bot. Mag.* 15: Pl. 8800 (colored). 1919.—See Bot. Absts. 3, Entry 2295.

1090. TURRILL, W. B. *Lonicera chaetocarpa*. *Curtis Bot. Mag.* 15: Pl. 8804 (colored). 1919.—See Absts. 3, Entry 2296.

1091. VAN FLEET, W. New pillar rose. Jour. Heredity 10: 136-137. Fig. 18-19. 1919.
—See Bot. Absts. 3, Entry 1042.

1092. WHEELER, H. J. Orchard, berry and vegetable fertilizers. Massachusetts Fruit Growers Assoc. Ann. Rept. 1919: 1-15. 1919.—A reprint without repaging of Massachusetts State Dept. Agric. Circ. 11.

1093. WHEELER, H. J. Orchard, berry and vegetable fertilizers. Massachusetts State Dept. Agric. Circ. 11. 15 p. 1919.—A popular discussion.

1094. WRIGHT, C. H. *Disporum pullum*, var. *brunnea*. Curtis Bot. Mag. 15: Pl. 8807 (colored). 1919.—See Absts. 3, Entry 1842.

1095. CHENOWETH, W. W. The home manufacture of fruit products. Massachusetts Fruit Growers Assoc. Ann. Rept. 1919: 1-20. 1919.—A popular discussion reprinted without repaging from Massachusetts Agricultural College, Extension Bulletin 24.

1096. CRUESS, W. V. Lessons for prune growers from the September rains. Monthly Bull. Comm. Hort. California 2: 53-60. Fig. 27-33. 1919.—With normal seasons, the California prune grower feels no concern regarding probable showers during the drying season. In September of 1918, however, heavy rains fell and were followed by a long period of warm, moist weather resulting in an enormous loss of prunes. The usual methods of handling wet prunes failed because of the adverse weather conditions. Sulfuring of this fruit, however, by exposing it on trays to the fumes of burning sulfur for two hours, checked molding and fermentation and made it possible to dry the fruit satisfactorily. The sulfured product was excellent in flavor and appearance and found a market. Fermented dried prunes can be separated from the sound fruit by flotation in water in a 5 per cent salt solution or a 10 per cent glucose solution. The damaged fruit could be most satisfactorily utilized by feeding it to hogs.—E. L. Overholser.

1097. SERRE, PAUL. Utilisation des pepins de raisins en Californie. [Utilization of grape seeds in California.] Compt. Rend. Acad. Agric. France 1919: 150-151. 1919.—Calls attention to the fact that from 3000 to 4000 tons of grape seeds in California there are obtained 550 tons of syrup, 340 to 350 tons of oil, 330 to 340 tons of tannin extracts and 1600 to 2000 tons of stock food.—E. A. Bessey.

MORPHOLOGY, ANATOMY AND HISTOLOGY OF VASCULAR PLANTS

E. W. SINNOTT, Editor

1098. ABBAMS, L. R. A new California cypriss. Torreya 19: 92. 1919.—See Bot. Absts. 3, Entry 1822.

1099. ANONYMOUS. [Rev. of: H. H. MANN. Variation in flowers of *Jasminum malabaricum*. Given before the Linnean Society. Jour. Bot. 57: 136. 1919.

1100. ARBER, A. On heterophylly in water plants. Amer. Nat. 53: 272-278. 1919.—Two general types of submerged leaf occur, one ribbon-like and more divided than aerial, other broad and thinner. Author refers to heterophylly in terrestrial angiosperms and juvenile forms of conifers; demands interpretation of heterophylly that will cover all cases. Author recalls observations in *Sagittaria* that aquatic and aerial leaves are differentiated in submerged bud; that first leaves are ribbon-like even when young plant is terrestrial; and that this juvenile type can be induced again in maturity by weakening conditions, such as removal of roots. Also refers to Burns' conclusions on *Proserpinaca palustris* that aquatic condition is not cause of leaf division. For old conception of heterophylly as induced by

aquatic life author would substitute idea that such a difference between juvenile and mature leaves as would render former suitable to aquatic life was prerequisite to migration to water.—*J. P. Kelly.*

1101. ARBER, the late E. A. NEWELL. Some remarks on the organization of the cones of *Williamsonia gigas* (L. and H.). *Ann. Bot.* 33: 173-179. *Fig. 1-8.* 1919.—See *Bot. Abstr.* 3, Entry 1143.

1102. BLAKE, S. F. Revision of *Ichthyomethia*, a genus of plants used for poisoning fish. *Jour. Washington [D. C.] Acad. Sci.* 9: 241-252. 1919.—See *Bot. Abstr.* 3, Entry 1328.

1103. BLAKESLEE, A. F. A unifoliate mutation in the Adzuki bean. *Jour. Heredity* 10: 153-155. *Fig. 9.* 1919.—See *Bot. Abstr.* 3, Entry 979.

1104. COULTER, J. M. Seedling of dicotyledons. [Rev. of: SINNOTT, E. W. Conservation and variability in the seedling of dicotyledons. *Amer. Jour. Bot.* 5: 120-130. *Fig. 4.* 1918. (See *Bot. Abstr.* 1, Entry 579.)] *Bot. Gaz.* 67: 103. 1919.

1105. FARWELL, OLIVER A. Cramp bark, highbush cranberry. *Northwestern Druggist* 27: 245-246. 1919.—See *Bot. Abstr.* 3, Entry 1709.

1106. FLURY, PHILIPP. Ueber Wurzelverwachsungen. [Root grafting.] *Schweiz. Zeitschr. Forstwesen* 70: 37-41. 1919.—See *Bot. Abstr.* 3, Entry 535.

1107. GERTZ, OTTO. Kallushypertrofier och några i samband dermed stående anatomiskt-fysiologiska förhållanden hos minerade blad. [Callus hypertrophies and some connected anatomico-physiological conditions in mined leaves.] *Bot. Notiser* 1918: 121-139. 1918.—See *Bot. Abstr.* 3, Entry 1243.

1108. HITCHCOCK, A. S. A peculiar species of *Lasiacis*. *Jour. Washington [D. C.] Acad. Sci.* 9: 35-38. 1919.

1109. HOLMES, M. G. Observations on the anatomy of ash-wood with reference to water-conductivity. *Ann. Bot.* 33: 255-264. *Fig. 1-7.* 1919.—Counts and measurements of vessels in the first annual ring were made throughout several shoots of ash which differed in size and vigor. Calculations were made and curves plotted which made possible a comparison, in regard to the proportion of water conducting elements, between different parts of the same shoot as well as between shoots of different kinds. The chief results are as follows: The total area of the wood and the total number of vessels both decrease from base to apex, the decrease in the former being most rapid at the base. The average diameter of the vessel cavities usually rises slightly and then falls towards the apex; in small weak shoots only the fall is seen. The number of vessels per square millimeter rises and the curve is especially steep at the apex; the figures are very high for weak shoots. The total area of vessel cavities—absolute conductivity—of course falls in all cases; it is highest in the most vigorous shoots and in cases where the apical bud is strongest. The percentage of the area of the wood occupied by vessels—specific conductivity—generally rises and then falls, the maximum occurring nearer the apex of the shoot than the base; the figures are lowest for weak shoots. A comparison is made between the results for the ash and those for the hazel previously studied; the curves are similar but the specific conductivity of ash is much lower than that of hazel.—*W. P. Thompson.*

1110. LUNDEGÅRDH, HENRIK. Ekologiska och fysiologiska studier på Hallands Väderö. II. Till kännedom om strandväxternas fysiologi och anatomi. [On the physiology and anatomy of shore-plants.] [Swedish, with English summary.] *Bot. Notiser* 1919: 1-39. 1919.

1111. MARIE-VICTORIEN, FR. DES E. C. La vie sexuelle chez les Hydrocharitacées. [Sexual life in the Hydrocharitaceae.] *Naturaliste Canadien* 45: 130-133. Mar., 1919.—Author notes M. L.-D. MIGNAULT's statement [See following entry, 1112] that the pollen of *Valisneria spiralis* escapes from the submerged staminate flowers, and rising to the surface fertilizes the pistillate flowers. He then describes the manner of fertilization of another genus of the order, *Philotria Canadensis* (Michx.) Britton. The staminate flowers near the bottom of the water becoming inflated with gas, break off and rise, spreading the pollen grains on the surface of the water where they are supported by the air enmeshed between the minute capillary processes growing out of the outer envelop of the grain. The pistillate flowers are also brought to the surface of the water, but by an extraordinary extension of the perianth. The stigmas are curved so as readily to make contact with the floating pollen.—A. H. MacKay.

1112. MIGNAULT, L.-D. Une plante intéressante. [An interesting plant.] *Naturaliste Canadien* 45: 101-103. Jan., 1919.—A popular sketch of the form, habitat and habits of *Valisneria spiralis*.—A. H. MacKay.

1113. PHILLIPS, R. W. Note on the duration of the prothallia of *Lastraea filix-mas* (Presl). *Ann. Bot.* 33: 265-266. 1919.—Prothallia growing on pieces of coke were placed in a glass-covered basin on a feebly illuminated shelf. After two years they had grown upright to a height of 15 mm. though only 1 mm. broad. Antheridia were abundant but no archegonia were found. Some were transplanted to suitable conditions and grew normally producing young plants. The remainder were replaced and lived for six years in the unfavorable conditions.—W. P. Thompson.

1114. ROWLEE, W. W. Synopsis of the genus *Ochroma*, with descriptions of new species. *Jour. Washington [D. C.] Acad. Sci.* 9: 157-167. 1919.

1115. SMALL, JAMES. The origin and development of the Compositae. *New Phytol.* 18: 65-89. *Fig. 41-53.* 1919.—See *Bot. Absts.* 3, Entry 1142.

1116. WEATHERWAX, P. The morphological basis of some experimental work with maize. *Amer. Nat.* 53: 269-272. 1919.

MORPHOLOGY AND TAXONOMY OF BRYOPHYTES

ALEXANDER W. EVANS, *Editor*

1117. EVANS, ALEXANDER W. A new *Riccia* from Peru. *Torreyana* 19: 85-88. 1 *fig.* 1919.—*Riccia bistriata* sp. nov. is described. This species was collected by Cook and Gilbert at Santa Ana, Peru, June 25, 1915. It is the only adequately published *Riccia* from Peru. It differs from all other Marchantiales in the peculiar hands of thickening which are found in the walls of the green cells. These are illustrated in the figure.—J. C. Nelson.

1118. GERTZ, OTTO. Anomalier hos rhizoiderna a grodd-knoppar af *Lunularia cruciata* L. [Anomalies in the rhizoids on the gemmae of *Lunularia cruciata*.] [Swedish, with German resumé.] *Bot. Notiser* 1918: 141-150. 21 *fig.* 1918.—The author has made cultures in the following media: distilled water; 0.1 per cent NH_4NO_3 ; 1 per cent KNO_3 ; 1 per cent NaNO_3 ; 0.1 per cent glycerin. The anomalies were apparently produced by the toxic effects of the minute quantity of copper contained in the distilled water; by the liberated nitric acid in the NH_4NO_3 solution; and by the liberated potassium and sodium hydrates in the KNO_3 and NaNO_3 solutions, respectively. Regarding the anomalies produced in the glycerin solution the author offers no explanation.—P. A. Rydberg.

1119. WILLIAMS, R. S. The genus *Desmatodon* in North America. *Bull. Torrey Bot. Club* 46: 207-220. *Pl. 11.* 1919.—A discussion is given of the genus *Desmatodon* with key to, and description of, the following species: *D. latifolius* (Hedw.) Brid., *D. suberectus* (Hook.)

Limpr., *D. Guepini* B. S. G., *D. plinthobius* Sull. & Lesq., *D. obtusifolius* (Schwaegr.) Jur., *D. Porteri* James, *D. sylvaticus* B. S. G., *D. Garberi* Lesq. & James, *D. Sprengelii* (Schwaegr.) Williams, *D. stomatodontus* (Card.) Williams, *D. cernuus* (Hueb.) B. S. G., and *D. Lawrii* (Schultz) B. S. G. Of other species which have been referred to the genus, *D. neomexicanus* Sull. & Lesq., *D. nervosus* B. S. G., and *D. Bushii* Card. & Thér. are placed in *Tortula*; *D. arenaceus* Sull. is reduced to *D. obtusifolius*; *D. Sartorii* (C. Müll.) Paris is referred to *Leptodontium*; and *D. sylvaticoides* Ren. & Card., to *Pottia*.—P. A. Munz.

MORPHOLOGY AND TAXONOMY OF FUNGI, BACTERIA AND MYXOMYCETES

E. W. OLIVE, Editor

1120. ATKINSON, GEORGE F. *Collybia campanella* Peck, and its near relatives in the eastern United States. (Rept. of the State Botanist, 1917.) New York State Mus. Bull. 205-206: 61-65, 1918. The author gives reasons for the following changes in nomenclature: *Marasmius campanellus* (Pk.) Atkinson & House nov. comb. for *Collybia campanella* Pk., *Marasmius setipes* (Pk.) Atkinson & House nov. comb. for *Collybia stipitaria* var. *setipes* Pk., *Marasmius stipitarius* (Fr.) Atkinson & House nov. comb. for *Agaricus (Collybia) stipitarius* Fr., and *Marasmius zonatus* (Pk.) Atkinson & House nov. comb. for *Agaricus (Collybia) zonatus* Pk.—Alfred H. W. Povah.

1121. BACCARINI, PASQUALE. Funghi etiopici. Ann. Botanica [Roma] 14: 117-140. Aug. 30, 1917.—Thirty new species and five new forms and varieties of fungi collected in Eritrea, Northern Abyssinia and the southern Negri region, from the collections of Chiavenda and Pappi are described. The plants are deposited in the herbarium of the Italian colonial department. The new species represent the genera *Lentinus*, *Trameles*, *Hydnum*, *Stereum*, *Acacidium*, *Puccinia*, *Gymnoconia*, *Ravenelia*, *Sorosporium*, *Capnodium*, *Sphaerella*, *Rosellinia*, *Xylaria*, *Pleurospora*, *Trabutia*, *Sphaeronema*, *Phoma*, *Macrophoma*, *Melasma*, *Coniothyrium*, *Diplodiella*, *Haplosporella*, *Colletotricum*, and *Macrosporium*.—J. A. Nieuwland.

1122. BEARDSLEE, H. C. The Russulas of North Carolina. Jour. Elisha Mitchell Sci. Soc. 33: 147-190, pl. 70-111. 1918.—Contains many supplementary notes by W. C. Coker. A few new species described. —R. M. Harper.

1123. BEAUVIERE, J. [REV. OF: VINCENS, FRANÇOIS. Recherches organogéniques sur quelques Hypocréales. [Organogenic researches on some Hypocreales.] Thèse pour le Doctorat des Sciences naturelles présentée à la Faculté des Sciences de Paris. 170 p., 3 pl., 71 fig. L. Declume: Lons-le-Saulnier (Paris?), 1917.] Rev. Gen. Sci. pures et appliquées 30: 5657 1919.—The author attempts to work out a better basis for the classification of the Hypocreales and the Pyrenomyces in general than that now in use. He would discard the characters used by students up to the present time such as the presence or absence of the stroma, its structure, consistence, and the relation of the perithecia to the substratum and even the spore characters although the latter are considered of more value than the former. He hesitates to apply to the Pyrenomyces characters such as those used by Boudier in the classification of the Discomycetes, i.e., the structure and chemical composition of the ascus, on account of the incompleteness of our knowledge of the morphology of the Pyrenomyces. In this work, the author seeks merely to discover characters less artificial than those of the stroma and less difficult to apply than those of the spores. He attaches considerable importance to the manner of the disposition of the asci in the perithecia and concludes that this would be a good basis for a revision of the classification of the Pyrenomyces when we have a detailed knowledge of the development of a sufficiently large number of species.—Fred J. Seaver.

1124. BONAR, LEE. The rusts of the Douglas Lake region. Rept. Michigan Acad. Sci. 20: 277-278. 1918.—The writer lists forty rusts collected during the months of July and August, 1917, in a survey of the region about the University of Michigan Biological Station at Douglas Lake, Michigan. [See Bot. Absts. 2, Entry 625.]—G. H. Coons.

1125. CHENAÏTAIS, J.-E. Etudes sur les Pyrénomycètes (2). [Studies of the Pyrenomycetes (2).] Bull. Trimest. Soc. Mycol. France 35: 46-98. Fig. 1-8. 1919.—Under V—the author describes *Lasiosphaeria erinacea*, *Metasphaeria rustica*, *Lophiostoma striatum*, *Zigmoella Hederae*, *Rosellinia coniochaeta*, and *Othia alnea*. Under VI—the author discusses the genus *Massarinula*, giving a list of species belonging to this genus. Under VII—the author takes up the Lasiosordareae, comparing the genera *Lasiosphaeria* and *Hypocopa*, giving a classification of the genera *Lasiosordariella*, *Lasiosordaria*, and *Lasiosordariopsis*. This is followed by a description of *Lasiosordaria vagans*, *Lasiosordaria laticola*, and *Lasiosordaria ovina*. Under VIII—the author makes some critical remarks relative to the controversy which exists in regard to the appendages of *Podospora*.—Fred C. Wentkenhin.

1126. CURTIS, K. M. A contribution to the life-history and cytology of *Synchytrium endobioticum* (Schilb.) Percival, the cause of potato wart disease. New Phytol. 18: 90-91. 1919.—A preliminary statement. The resting sporangium gives rise to numerous uniloculate zoospores, which infect the growing potato. Subsequent development of the zoospore leads to the production of smaller zoospores which are said to be facultative gametes, which may infect the host without fusion. Infection by a zygote leads to the formation of a resting sporangium.—I. F. Lewis.

1127. DEARNESS, JOHN, AND HOMER D. HOUSE. New or noteworthy species of fungi. (Rept. of the State Botanist, 1917.) New York State Mus. Bull. 205-206: 43-59. 1918.—An annotated list of 75 species of fungi of which the following are described as new to science: *Anthostoma peckii* D. & H., *Asterella fraxinina* D. & H., *Aylographum onocleae* D. & H., *Dendrophoma variabilis* D. & H., *Diaporthe arctospora* D. & H., *Gloeosporium castanopsidis* D. & H., *Gloniella parvulata* D. & H., *Gloniella vaccinicola* D. & H., *Labrella celastris* D. & H., *Laetadial caricis* D. & H., *Laetadial smilacinae* D. & H., *Leptosromella chenopodii* D. & H., *Phylloticta omphaleae* D. & H., *Septoria hedeomae* D. & H., and *Sporodesmium naviculum* D. & H. Two new combinations used are *Phyllachora haydeni* (B. & C.) Dearness and *Rhabdospora mirabilissima* (Pk.) Dearness.—Alfred H. W. Povah.

1128. ESSIG, E. O. New hosts of oak-root fungus in Humboldt County. Monthly Bull. Comm. Hort. California 2: 79-80. 1919.—See Bot. Absts. 3, Entry 1170.

1129. GÄUMAN, ERNST. Ein Beitrag zur Kenntnis der lappländischen Saprolegnien. [A contribution to the knowledge of the Saprolegniaceae of Lapland.] Bot. Notiser 1918: 151-159. 1918.—Phytogeographical and other notes on *Saprolegnia dioica*, *S. monoica*, *S. mixta*, *S. Thureti*, *S. lapponica*, *S. torulosa*, *S. hypogyna*, *Achlya prolifera* and *A. racemosa*. *S. lapponica* Gäuman and *S. mixta* v. *Asplundii* Gäuman, are described as new. Reference literature, 11 articles.—P. A. Rydberg.

1130. HASSELBRING, H. Sex organs of Phytophthora. [Rev. of: MURPHY, P. A. The morphology and cytology of the sexual organs of *Phytophthora erythroseptica* Pethyb. Ann. Bot. 32: 115-153. Pl. 3. 1918. (See Bot. Absts. 1, Entries 573, 1587.)) Bot. Gaz. 67: 97-98. Jan., 1919.

1131. HOUSE, HOMER D. New or interesting species of fungi. V. (Rept. of the State Botanist, 1917.) New York State Mus. Bull. 205-206: 32-42. Fig. 3-6. 1918.—An annotated list, containing some descriptions besides those of new species, of about 60 species of fungi. New species and names are: *Humaria peckii* House sp. nov., *Nolanea peckii*, *Pilosace peckii*, *Pilocybe castipes*, *Sphaerella trugae*, and *Sphaerella clintoniana*. The following are new combinations: *Bombardia bombardia* (Batsch), *Didymaria didyma* (Ung.), *Eutypa eutypa* (Achar.), *Gnomoniella gnomon* (Tode), *Melogramma melogramma* (Bull.), and *Phlyctaena phlyctaenoides* (B. & C.).—Alfred H. W. Povah.

1132. ITANO, ARAO, AND JAMES NEIL. Influence of temperature and hydrogen ion concentration upon the spore cycle of *Bacillus subtilis*. Jour. Gen. Physiol. 1: 421-428. 1919.—See Bot. Abstr. 3, Entry 1239.

1133. LISTER, G. Mycetozoa recorded as British since 1909. Jour. Botany 57: 105-111. 1919.—Ten years have elapsed since the publication of the first edition of the "Guide to the British species of Mycetozoa." In the preparation of a new edition changes in nomenclature were required to make it agree with the second edition of the "Monograph of Mycetozoa" published in 1911, and also much new information was incorporated. Five genera, 35 species and several varieties have been added to the British list. Notes on the occurrence, discovery, nomenclature, and morphology of these species and varieties are given. *Physarum verum* Sommer. var. *iridescentia* is described as new.—K. M. Wiegand.

1134. LLOYD, C. G. Letter, No. 69. 18 p. Apr. 1919. (Cincinnati, Ohio).—This letter includes the usual acknowledgment of specimens received and miscellaneous notes on a wide variety of fungi, particularly Polyporaceae. A special request is addressed to friends and correspondents asking that fungi be sent to the Lloyd museum. The forms most desired are tremellaceous fungi, Pyrenomyces and Discomycetes possessing a large fruit-body, Clavarias, Thelephoraceae and Gasteromyces. A review of Kauffman's "Agaricaceae of Michigan" is appended.—H. M. Fitzpatrick.

1135. MOREAU, FERNAND. Sur une Tuberculariacée parasite du Bois, le *Volutella Buxi* (Corda) Berk. [A Tuberculariaceae parasite on box, *Volutella Buxi*.] Bull. Trimest. Soc. Myc. France 35: 12-14. Fig. 1. 1919.—The author describes *Volutella Buxi*, which was found on Box in the garden of Château de Fontainebleau in April 1915 among other parasites.—Fred C. Werkenthin.

1136. MULVANIA, MAURICE. A comparison of azotobacter with yeasts. Tennessee Agric. Exp. Sta. Bull. 122. 8 p. 1919.—A direct comparison is made of the morphological and physiological characteristics of twenty-five strains of *Azobacter* with two species of yeasts. The tables presented show a striking similarity between all the organisms studied, and it is concluded that they are all members of a "narrowly restricted group of organisms." Among the striking features of resemblance are noted the presence of a nucleus and reproduction by buds in both yeasts and *Azobacter*. These are said not to be met with among bacteria in general. The spores of *Azobacter* resemble spores of yeasts rather than bacteria in regard to heat resistance.—Maurice Mulvanian.

1137. OVERHOLTS, L. O. The species of *Poria* described by Peck. (Rept. of the State Botanist. 1917.) New York State Mus. Bull. 205-206: 67-166. Pl. 1-23. 1918.—About 20 species of resupinate pore fungi described by Peck are studied microscopically, each species being treated in four sections: (1) Peck's original description; (2) Notes on the present condition of type material, on characteristics not mentioned by Peck, on explanation of discrepancies, on characteristics and probable relationships of species; (3) Redescription, i.e., a combination of the material presented in sections 1 and 2; (4) Illustrations. Each species is illustrated as fully as the material permits, three types of illustrations being used: (a) Natural size photographs of type material. (b) Photomicrographs of free-hand sections of the hymenium. (c) Line drawings of spores and hyphae with the aid of camera-lucida. The following species are treated: *Poria attenuata* (Pk.) Cke., *P. attenuata* var. *rubincarnata* Pk., *P. aurea* Pk., *Daedalia extensa* Pk., *Poria fimbriatella* (Pk.) Sacc., *P. griseoalba* (Pk.) Sacc. [through typographical error this is given as *P. griseoalba* (Pk.) Sacc.], *P. indurata* (Pk.) Cke., *P. laetifica* (Pk.) Sacc., *P. macouni* (Pk.) Overholts, *P. marginella* (Pk.) Sacc., *P. nutans* Pk., *P. nutans* var. *tenuis* Pk., *P. myceliosa* Pk., *P. odorata* (Pk.) Sacc., *P. ornata* (Pk.) Sacc., *P. pinen* (Pk.) Sacc., *P. rodiculosa* (Pk.) Sacc., *P. semitincta* (Pk.) Sacc., *P. setigera* Pk., *P. subacida* (Pk.) Sacc., *P. subiculosa* (Pk.) Cke., *P. sulphurella* (Pk.) Sacc., and *Daedalia sulphurella* Pk.—Alfred G. W. Porah.

1138. RANOLÉVITCH, NICOLAS. Sur quelques espèces nouvelles de Champignons. [Some new species of fungi.] Bull. Trimest. Soc. Mycol. France 35: 14-26. Fig. 1-14. 1919.—The author collected 203 species of fungi in the Basses-Alpes, 14 species and 3 varieties of which were new to science: *Sphaerella radiata* n. sp., *Pyrenophora Meliloti*, n. sp., *Pyrenophora Pellatii*, n. sp., *Cronartium Euphrasiae*, n. sp., *Placosphaeria Asperulae*, n. sp., *Vermicularia Dematii* (Pers.) Fr. var. *Phalangii*, n. var., *Cytospora Aesculi*, n. sp., *Septoria onobrychidis*, n. sp., *Septoria monspessulani*, n. sp., *Leptothyrium coronatum* n. sp., *Leptostromella hysterioides* (Fr.) Sacc. var. *Calamagrostidis*, n. var., *Gloeosporium aciditicola*, n. sp., *Monosporium Centranthi*, n. sp., *Ramulaspera Poterii*, n. sp., *Ramularia Hieracii*, n. sp., and *G. Jacobaeae*, n. sp. A detailed description of these fungi and figures within the text are given by the author.—*Fred C. Wentkin*.

1139. SPURATT, ETHEL R. A comparative account of the root-nodules of the Leguminosae. Ann. Bot. 33: 189-199. Pl. 13, fig. 1-6. 1919.—Besides the legumes, two gymnospermous families (Cycadaceae and Podocarpaceae), two dicotyledonous families (Elaeagnaceae and Myricaceae), and the genera *Alnus* and *Ceanothus* are said by the author to bear root-nodules containing *Bacillus radicola*. The root-tubercles of the non-legumes are modified lateral roots, while those of legumes are exogenous in origin. The leguminous nodules are placed in four groups: (1) The Genista type, in which the vascular supply forms one broad zone across the base, and the bacteroid tissue becomes divided into several parts. (2) The Phaseoleae and Trifolieae type, in which the bacteroid tissue always remains an undivided central zone. (3) The Viciae type, in which there is a well-defined apical meristem with a basal intercalary zone. Zoogical infection threads are very prominent in this type. (4) The Mimosoidae type, in which the nodules persist more than one year. The production of slime is connected with the amount of nitrogen fixed, and is influenced by the medium in which the bacteria are living.—*E. W. Olive*.

PALEOBOTANY AND EVOLUTIONARY HISTORY

EDWARD W. BERRY, *Editor*

1140. CHAMBERLAIN, C. J. Fossil plants. [Rev. of: SEWARD, A. C. Fossil plants, a textbook for students of botany and geology. Vol. III. Pteridospermae, Cycadofilices, Cordaites, Cycadophyta. 8vo. xiv + 668 p. Fig. 263. Cambridge University Press. 1917.] Bot. Gaz. 67: 93-95. Jan., 1919.

1141. KNOWLTON, F. H. Description of a supposed new fossil species of maize from Peru. Jour. Washington [D. C.] Acad. Sci. 9: 134-136. 1919.—A fossilized ear of corn recently received from Peru by the U. S. National Museum is described, and the species named *Zea antiqua*. Although the specimen externally resembles certain living South American types, yet its complete fossilization indicates to the author a possible age of several thousand years, making the date of the first appearance of maize or its ancestors much earlier than is usually believed.—*Helen M. Gilkey*.

1142. SMALL, JAMES. The origin and development of the Compositae. New Phytol. 18: 65-99. Fig. 41-55. 1919.—A brief history (1 p.) is given of the theories of various authors, ending with the statement that "the remarkable number of characters which are common to the Lobelioideae and the Compositae leaves very little doubt of the true affinity of the two groups."—A discussion (13 p.) of the theories of evolution, written from the Bergsonian point of view, includes paragraphs on Natural selection, Hybridization, Mutations, Orthogenesis, Epharmosis, and Isolation and Differentiation. Epharmosis is defined as "the act of developing epharmy in Cockayne's sense of the word," which "limits epharmy to adaptations which are the direct result of an environmental stimulus . . ." Both orthogenesis and epharmosis are emphasized by the author as especially applicable to the Compositae. To orthogenesis is compared the "evolution" of the Uranium-Actinium series in some detail.

The author's conclusion is: "In evolution by *orthogenetic saliation*, with *epharmerosis* and *elimination* of the unfit exercising a directing and delimiting function on the actual forms assumed by organized life, we have the best of Darwinism, neo-Lamarckism, neo-vitalism, Mendelism and the mutation theory."—An examination (6 p.) of the characters of the Lobeliodeae leads to the conclusion that this group shows sixteen "characters and tendencies, or lines of orthogenesis, leading towards the Compositae."—The paper closes with a description of the possible origin of the basal genus *Senecio* from such a Lobelioid, as *Siphocampylus*.—*I. F. Lewis.*

1143. ARBER, THE LATE E. A. NEWELL. Remarks on the organization of the cones of *Willamsonia gigas*. (L and H) Ann. Bot. 33: 173-179. Fig. 1-5. 1919.—There are several uncertainties in regard to the exact organization of the cones owing to the fact that the male organs have never been found attached to the axis. From the evidence already available an attempt is made to determine the balance of probability in regard to the chief uncertainties. The following conclusions are reached: (1) The cones were monosporangiate, the female having a conical axis and the male an urn-shaped one. (2) The microsporophylls were borne on the tip of the urn-shaped axis which were therefore of the nature of a gonophore. (3) The axis of the female cone projected beyond the seeds and interseminal scales but bore no organ at its apex.—*W. P. Thompson.*

1144. SUMNER, F. B. Adaptation and the problem of "organic purposefulness." Amer. Nat. 53: 193-217. 1919.—Author considers organic adaptation as central problem in evolution and biology in spite of denials by such writers as Livingston that a problem really exists, or of attempts to minimize idea of specific definiteness in adaptive responses by Parker who emphasizes versatility of reactions. Author's analysis leads him to regard adaptive response as secondary phenomenon based on preceding "trial and error" stages or on inherited mechanism due to selection. Vitalists' assumption of entelechy guiding behavior of organisms characterizes as mystical; also indeterministic since given sequence of events may or may not come to pass depending on whim of entelechy.—*J. P. Kelly.*

PATHOLOGY

DONALD REDDICK, Editor

1145. ANONYMOUS. Orchard pests and diseases: directions for control. New Zealand Jour. Agric. 18: 182. 1919.—Formula for principal sprays are given including a table for standardising home-made lime-sulphur solution.—*E. R. Hodson.*

1146. ANONYMOUS. Making and applying Bordeaux. Potato Mag. 1st: 6. 5 fig. 1919.

1147. ANONYMOUS. Diseases in plantations of exotic trees. New Zealand Jour. Agric. 18: 63. 1919.—Plantings of *Betula alba* are reported to be suffering from attacks by *Melampsorium betulinae*; and *Pinus radiata* has been found injured by *Lophodermium pinastri*. The European larch (*Larix europaea*) is apparently far more susceptible than the Japanese larch (*Larix leptolepis*) to injury from the needle shedding fungus. [See Bot. Absts. 3, Entry 505].—*N. J. Giddings.*

1148. ANONYMOUS. Revised compatibility chart of insecticides and fungicides. New Zealand Jour. Agric. 18: 39-40. 1919.—Gives chart as revised by G. P. Gray of California.—*N. J. Giddings.*

1149. ANONYMOUS. The home orchard. New Zealand Jour. Agric. 18: 40-44. 1919.—See Bot. Absts. 3, Entry 1051.

1150. ARNOULD, A. Dommages causés aux végétaux par les fumées industrielles. [Damage caused to plants by industrial fumes.] Rev. of: HOLMES, J. A., E. C. FRANKLIN, AND R. A. GOULD. Report of the Selby Smelter Commission. U. S. Dept. Interior, Bur. Mines Bull.

96: 1-528. 41 pl., 14 figs. 1915.] Rev. Eaux et Forêts 57: 121-125. 1919.—The effects on vegetation of the fumes given off by the smelter of the Selby Smelting and Lead Company in Solano County, California, were exhaustively studied by a large staff of experts. Greater difficulty was found in determining the effect of sulphurous acid on trees than on annual crops such as cereals. As a result of changes installed by the Company, the Commission was able to state that there was no further danger of damage to vegetation or to the health and comfort of the inhabitants. Both the report and investigation are worthy of imitation by French authorities in the reconstruction of factories in the devastated regions of France. It would be desirable for the State to require in new installations the purification or neutralization of all liquid or gaseous residues before they leave the works. [See Bot. Absts. 3, Entry 513.]—S. T. Dana.

1151. ARTSCHWAGER, ERNST F. Histological studies on potato leaf-roll. Jour. Agric. Res. 15: 559-570. Pl. C and 35-45. 1918.—Potato plants of European and American origin affected with leafroll were examined critically and are compared with healthy plants. [See Bot. Absts. 2, Entry 67.]—D. Reddick.

1152. ASHBY, S. F. Budrot of coconuts. Jour. Jamaica Agric. Soc. 23: 23-25. 1919.—As insurance against budrot the author advises selection of nuts from disease-free trees, rejection of any showing rot, destruction of all nuts not germinating within a reasonable time, and the application of Bordeaux paste to the stalk end of the nuts before planting.—John A. Stevenson.

1153. ASHBY, S. F. Late blight of Irish potatoes. Jour. Jamaica Agric. Soc. 23: 10-16. 1919.—A popular account of the symptoms and etiology of the disease. Most of the infection in Jamaica is due to planting of diseased tubers. Temperature and moisture relations account for infection of the winter crop in Jamaican lowlands and freedom from disease in the uplands. Summer crop is not often blighted due to higher mean temperatures. Bordeaux or Burgundy mixtures are recommended.—John A. Stevenson.

1154. BARRUS, M. F. Seed improvement and certification. Potato Mag. 1st: 10, 25, 34. 1 fig. 1919.—See Bot. Absts. 3, Entry 919.

1155. BATTEN, LILY, AND HERBERT W. BYWATERS. Occurrence of mould in cocoa butter. Amer. Jour. Pharm. 91: 112-115. 1919.—The authors report the presence of *Penicillium glaucum*, a pink yeast, and what was believed to be *Aspergillus oryzae* in a 28 pound block of cocoa butter. As cocoa butter is distinguished among fats by its resistance to influences tending to produce rancidity and mouldiness, the authors deemed it noteworthy to determine the nature of the fungus present. On breaking open the block of cocoa butter, drops of a clear liquid, apparently water, were observed to be present in some of the larger vesicles. Cultural experiments were then made with *Aspergillus* to note conditions which were favorable for the growth of this fungus on cocoa butter. The authors report that cocoa butter would not become mouldy if kept free from water, but, if water finds its way into cocoa butter and especially if the water contains substances probably of a nitrogenous nature, which can serve as food for the fungus, then there is real danger of the cocoa butter becoming mouldy. (Reprinted from the Journal of the Society of Chemical Industry, July, 1918.)—Anton Hogstad Jr.

1156. BESSEY, ERNST A., AND WALTER K. MAKEMSON. Notes on the control of rye smut. Rept. Michigan State Bd. Agric. 1917: 305-307. 1917 (1918).—Rye was infected with *Uromyces occulta* by rolling seed in spores before planting thus demonstrating that infection takes place at the time of germination or shortly thereafter. Formaldehyde treatment of seed prevented disease entirely.—G. H. Coons.

1157. BRANN, F. R. Factors concerning the drop of immature citrus fruit in central California. Monthly Bull. Comm. Hort. California 2: 74-75. 1919.—See Bot. Absts. 3, Entry 1057.

1158. BRUNER, S. C. Caída de las nueces e inclinación de las hojas del cocotero en Cuba. [Nut fall and leaf droop of coconuts in Cuba.] *Revist. Agric. Com. y Trab.* 2: 96. 1919.—In the December (1918) number of the *Cuba Review* Fox erroneously locates the above named disease in Cuba, perhaps mistaking the bud rot for it.—F. M. Blodgett.

1159. BRUNER, S. C. Un honguillo parásito del tincitido de la higuera. [A fungus parasite of an insect on the castor bean.] *Revist. Agric. Com. y Trab.* 2: 218.-219. 1919.—Insects, *Corythura gossypii*, of the castor bean were found to be affected by the fungus *Sporotrichum globuliferum*. Artificial inoculations were successful, but it was thought that as a commercial means of control it would be no more successful than against the chinch bug in the United States.—F. M. Blodgett.

1160. BRUNER, STEPHEN C. La preparación del caldo bordelés. [Preparation of Bordeaux mixture.] *Revist. Agric. Com. y Trab.* 2: 62-63. 1 fig. 1919.

1161. CLARK, C. F. The potato industry in Colorado. *Potato Mag.* 1st: 8-9, 22; 1st: 14-15, 29. 8 fig. 1919.—See Bot. Abstr. 3, Entry 920.

1162. CLINTON, G. P. Prematuring and wilting of potatoes. *Potato Mag.* 1st: 12-13, 24. 1919.—Discusses malnutrition due to potash deficiency, with regard to effects, contributing factors, and control methods.—Donald Folsom.

1163. CONDIT, I. J., AND H. J. STEVENS. "Dis-back" of the fig in California. *Monthly Bull. Comma. Hortie. California* 2: 61-63. Fig. 31-33. 1919.—There have been identified two forms of die-back of the fig tree in California. One form is described as showing small pustules of a fungus which encircles the limb just below the new growth on the older wood. When such limbs are split longitudinally a distinct darkened and discolored area is present at the point where the sporulating pustules were found. The branch dries out and becomes very hard and brittle with the bark closely attached. A *Botrytis*, probably *Botrytis cinerea*, is believed to be the causal organism. Field observations indicate that infection starts in the fruit, and the mycelium after penetrating the fig works its way down into the wood. At this point it comes to the surface and produces conidiophores. It remains local and kills only that portion. In pure cultures, the junior author found conidiophores were produced in eight to ten days in either prune or plain nutrient agar.—The second form exhibits no fruiting bodies on the outside of the limbs, but shows, when split open, a shrinking of the pith and the presence of sclerotia of various shapes and ranging in size from a small pea to a body 12 to 15 mm. in length and 5 or 6 mm. in width. The bark becomes softened and shreds off. The inner tissues are softened and pithy in texture. This trouble is caused by a *Sclerotinia*, probably *Sclerotinia libertiana*. A theory is offered concerning the method of infection, in that following frost damage, the tips of the limbs become susceptible, and that during the cold, damp days following, apothecia may be formed from sclerotia lying in dead twigs or on the ground and spores set free which are blown to the leaves and twigs by the wind. The sclerotia germinate well in both plain nutrient, and prune agar, and small sclerotia can be seen forming within nine days.—E. L. Overholser.

1164. COONS, G. H. A Phoma disease of celery. *Rept. Michigan State Bd. Agric.* 1917: 485-496. 1917 (1918).—Reprint Michigan Special Bulletin No. 81, being a popular presentation of the facts concerning this disease.—G. H. Coons.

1165. COONS, G. H. Report to the Botanist. *Rept. Michigan State Bd. Agric.* 1917: 297-303. 1917 (1918).—The writer reports plant pathological work carried out during the fiscal year ending July 1, 1917. Experiments on control of grain smut, celery diseases, and transportation diseases are reported. The production of anaphylactic shock in guinea-pigs with *Fusarium* of various species is reported. Experiments on the control of smut diseases using the concentrated formaldehyde method are given. *Fusarium oxysporum* is reported as invading the root system of potatoes following death of roots by drought. The introduction of black leg of potato (*Bacillus*) into the Lower Peninsula is described.—G. H. Coons.

1166. COONS, G. H. Notes on Michigan plant diseases in 1916. Rept. Michigan State Bd. Agric. 1917: 310-317. 1917 (1918).
1167. COONS, G. H. Oat smut. Rept. Michigan State Bd. Agric. 1917: 308-309. 1917 (1918).—Popular presentation of the facts concerning oat smut.—G. H. Coons.
1168. COONS, G. H. The relation of weather to epidemics of late blight of potato. Rept. Michigan State Bd. Agric. 1917: 317-318. 1917 (1918).—Rainfall conditions in the first half of the growing season influence severity of late blight of potatoes, caused by *Phytophthora infestans*, and from this arises the possibility of predicting when epiphytotic threaten.—G. H. Coons.
1169. DUTTON, W. C. Dusting and spraying experiments with apples. Michigan Agric. Exp. Sta. Special Bull. 87. 84 p. Fig. 1-6. 1918.—Reports three years' experience in spraying and dusting apples to control apple scab (*Venturia inaequalis*) with tables on cost of materials and applications. In two years out of three, dusting gave satisfactory scab control, while in the one year dusting failed almost entirely to control apple scab. Standard lime-sulphur solution gave better control than "dry lime-sulphur." An application of fungicide made when the flower buds were "pink" did not give increased freedom from scab.—G. H. Coons.
1170. EASIO, E. O. New hosts of oak-root fungus in Humboldt County. Monthly Bull. Comm. Hortic. California 2: 79-80. 1919.—The old roots of stumps of the redwood (*Sequoia sempervirens*) and the roots of the wild hazel (*Corylus rostrata* var. *californica*) are reported as being host plants for the oak-root fungus (*Armillaria mellea*).—E. L. Overholser.
1171. FERNOW, B. E. Blister rust control. [Rev. of: ANONYMOUS. Report on white pine blister rust control, 1918. American Plant Pest Committee Bull. 2. 18 p.] Jour. Forestry 17: 325-326. 1919.—See Bot. Absts. 3, Entry 532.
1172. FOSTER, J. H. Rev. of: RANKIN, W. HOWARD. Manual of tree diseases. 398 p. Macmillan Co.: New York, 1918.] Jour. Forestry 17: 321. 1919.
1173. FRANCIS, W. Orchard pests and how to combat them. Jour. Agric. S. Australia 21: 951-954. 1918.—Scab of apricot, leaf curl of peaches and prunes, black spot of apples and pears.—D. Reddick.
1174. FROMME, F. D., AND S. A. WINGARD. Bean rust: Its control through the use of resistant varieties. Virginia Agric. Exp. Sta. Bull. 220. 18 p., pl. 1-5. 1918. [1919.]—Rust (*Uromyces appendiculatus*) is an important disease of beans (*Phaseolus*) in Virginia with losses especially heavy on pole beans and on bush beans grown for dry-shell purposes. Kentucky Wonder (pole) and Tennessee Green Pod (bush) are the varieties most commonly injured in gardens and Navy Pea in fields. Defoliation following an attack of rust may result in total loss of the crop. Different varieties, some 80 of which were tested, showed marked variation in susceptibility. Varieties are classified according to relative susceptibility as rust-free, rust-proof, rust-enduring, and rust-susceptible. Rust may be eliminated as a factor in production by use of the non-susceptible varieties which are recommended.—F. D. Fromme.
1175. HIGGINS, B. B. Gum formation with special reference to cankers and decays of woody plants. Georgia Agric. Exp. Sta. Bull. 127: 23-59. Pl. 1-6, fig. 1-15. 1919.—See Bot. Absts. 3, Entry 1230.
1176. HORNE, W. T. Oak-fungus, oak-root fungus disease, fungus root-rot, toadstool root-rot or mushroom root-rot. Monthly Bull. Comm. Hortic. California 2: 64-68. Fig. 36-39. 1919.—The importance, symptoms, cause, characteristics, and control of the oak-root fungus (*Armillaria mellea*) and the utilization of infested areas are discussed. Nearly all trees and shrubs may be attacked. The fungus is rather slow-acting and hence, annual or short-lived

crops are not seriously injured; also plants with fine, slender roots are not much affected owing to the habit of the fungus of developing in roots of some thickness. The "French pear" is apparently immune while the trees are growing healthily, and black walnut and fig are considered highly resistant. Apples are more resistant than stone fruits and Myrobalan plum is apparently somewhat more resistant than peach or almond.—*E. L. Overholser*.

1177. LAFER, H. E. Diseases of the vine. *Jour. Agric. South Australia* 21: 462-471, 7 fig. 1918.—Anthracnose or black spot, caused by *Manginia ampelina*. The disease and the organism are illustrated and described following closely the work of Vials and Pacottet.—Sultana is the most susceptible variety, and is followed by Waltham Cross. Shiraz and Mataro appear to be almost immune.—*D. Reddick*.

1178. LINK, G. K. K. Potato losses in transit. *Potato Mag.* 1st: 5-7, 26-27. 3 fig. 1919.—Discusses causes, importance, control, and market inspection service.—*Donald Folsom*.

1179. MANOIN, VINCEY, HALLER and HENNEGUY. Le dépérissement des Épicéas dans la vallée de l'Arve. (Chedde et Chamonix). [Discussion on death of spruces in the Arve valley.] *Compt. Rend. Acad. Agric. France* 1919: 113-115. 1919.—The death of eight-tenths of the spruces in the region of Chedde and Chamonix in the valley of the Arve is probably due to the chlorine fumes escaping from the factories there during the manufacture of various chemicals for war uses.—*E. A. Bessey*.

1180. MILLER, JUNTUS. Northern Ontario seed potato trade. *Potato Mag.* 1st: 5, 33-34. 1919.—See Bot. Abstr. 3, Entry 881.

1181. MOREAU, FERNAND. Sur une Tuberculariacée parasite du Buis, le *Volutella Buxi* (Corda) Berk. [A Tuberculariaceous parasite on box, *Volutella Buxi*.] *Bull. Trimest. Soc. Myc. France* 35: 12-14. Fig. 1. 1919.—See Bot. Abstr. 3, Entry 1135.

1182. MUNCIE, J. H. Report to the Botanist. Rept. Michigan State Bd. Agric. 1917: 303-304. 1917 (1918).—Experimental work in the control of bean diseases are outlined. Review of Michigan Technical Bulletin 38.—*G. H. Coons*.

1183. MUNCIE, J. H. Experiments on the control of bean anthracnose and bean blight. *Michigan Agric. Exp. Sta. Tech. Bull.* 38. 60 p., 4 pl. 1917 (1918).—A consideration of the control measures of *Colletotrichum lindemuthianum* and *Bacterium phaseoli*. Diseases are recognized as being seed borne and spread during wet weather by cultivation. Thermal death point for the spores of *Colletotrichum lindemuthianum* lies between 45 and 48°, while old mycelium will endure exposure for ten minutes in liquid culture at 65°.—Both organisms may be carried to the field in bean trash or manure containing bean trash, but neither organism survives passage through the alimentary tract of cattle.—Negative results are reported in the use of chemical solutions and wet and dry heat for the control of the diseases.—Successful experiments in the use of seed of Michigan origin grown for a year in the arid West are reported. Control measures based on this practise are recommended. The article has a bibliography of 50 titles.—*G. H. Coons*.

1184. MURPHY, P. A. Seed potato inspection service in Canada. *Potato Mag.* 1st: 8, 28, 31. 7 fig. 1919.—See Bot. Abstr. 3, Entry 918.

1185. NEGER, F. W. Die wahre natur der russtaupilze. [True nature of sooty molds.] *Naturwissensch.* 6: 30-32. 1918.

1186. ORTON, C. R., and F. D. KERN. The potato wart disease: A new and serious disease recently discovered in Pennsylvania. *Pennsylvania Agric. Exp. Sta. Bull.* 156. 18 p., 4 fig. 1919.—Part I includes a brief discussion of the history of potato wart and its discovery in America; the symptoms of the disease, its distribution in Pennsylvania and a discussion of preventive measures. Part II discusses the cause of the disease, *Chrysophlyctis endobio-*

nice, the life history of the fungus including observations on the "primary nucleus" and the anatomy of the diseased tissues. It is pointed out that the so called "primary nucleus" may be the host nucleus which has been surrounded or engulfed by the parasite within the cell and that the warty growths are composed largely of fundamental and vascular tissues constituting a hyperplastic overgrowth.—C. R. Orton.

1187. ORTON, W. A. Protect seed potatoes against disease. *Potato Mag.* 1st: 6-7. Fig. 1-6. 1919.—Indicates value of protection and describes methods for it.—Donald Folsom.

1188. PAYNTER, L. Control of black-spot of pear. *New Zealand Jour. Agric.* 18: 221. 1919.—The results and costs of spraying tests are given for control of this disease (*Fusicladium pyrinum*).—E. R. Hodson.

1189. PETRI, L. Le galle del "Capparis tomentosa" Lam. prodotte dalla "Diacella capparidis" Pat. et Har. [Galla of Capparis caused by Diacella.] *Ann. Botany [Roma]* 14: 141-150. 3 fig., 1 pl. (colored). 1917 (1918).—From the microscopic examination of sections free hand and from paraffin embeddings the author concludes that the excrescences on the stems and leaves of *Capparis tomentosa* are caused by *Diacella capparidis*. Penetration of the mycelium into the cells of the host causes the gradual substitution of the plasmic contents. The leaf galls are not different histologically than those of the stems. Harmonious relationship of the symbionts does not exclude real parasitism.—J. A. Nieuwland.

1190. PETRI, L. Nuove vedute sulle cause dell' arricciamento della vite. [New views on the cause of "arricciamento" of the grape.] *Atti R. Accad. Lincei (Rend. Cl. Sci. fis. mat. e nat.)* V, 27: 271-275. 1 fig. 1918.—This disease is believed to be infectious as healthy cuttings grown in infected soil contract the disease. When grown in the same soil after sterilizing at 120°C. the disease did not appear. Infected vines did not recover in five years even when grown under best conditions. When affected vines are replaced by healthy vines, the new vines are soon affected. Washings from soil around affected vines carry disease but when filtered through Kitasato filter no longer carry it. The disease is characterized by certain abnormalities in the growth of the roots some of the cells of which are penetrated by a microorganism which presents the morphological characters of a plasmodium.—P. M. Blodgett.

1191. RANT, A. The white root-fungus of cinchona. *Recueil Trav. Bot. Néerland.* 14: 143-148. 1 pl. 1917.—Two root-fungi distinguished as white and gray are referred to. By means of pure cultures and infection experiments it was demonstrated that the gray root-fungus of *Cinchona* belongs to the genus *Rosellinia* and produces *Graphium* as a lower fructification both naturally and in culture.—The white fungus attacks usually trees of older growth of *C. ledgeriana* and *C. robusta*. On the external side of the bark, black rhizomorphs resembling *Armillaria mellea* of Europe are found. The plant is *Armillaria mellea* (Vahl) Quel. var. *javanica* P. Henn. Methods for the preparation of pure cultures are emphasized and the precautions necessary explained. A dilute agar-glucose-peptone-potassium acid phosphate was used; moss, living twigs of *Acer pseudoplatanus* and water for other substrata.—J. A. Nieuwland.

1192. ROBERTS, JOHN W., AND LESLIE PIERCE. Control of cherry-leaf spot. *U. S. Dept. Agric. Farmers Bull.* 1053. 8 p. 1919.

1193. SANBORN, C. B. Oklahoma and certified seed. *Potato Mag.* 1st: 23. 1919.

1194. SAYASTANO, L. Sul marciume radicale negli agrumeti italiani. [On root rot of the Italian citrus orchards.] *Boll. R. Staz. Speriment. Agrum. e Frutt. Acireale* 35: 1-8. 1919.—This is a complex form of disease due to diverse pathologic causes acting singly or in combination. These causes may be divided into two groups: (1) organic, among which should be classed bacteria (pathogenic or non-specifically pathogenic) and lower fungi; (2) physical, among which should be classed root asphyxia due to excessively compact soil and subsoil and stagnant water. Besides these apparently immediate causes the following seem to be condi-

tions which favor the particular behaviour of the diseased trees: (1) compact subsoil; (2) diminished resistance of the hitter orange; (3) overcrowding of the trees in the orchard; (4) excessive and irrational irrigation; (5) excessive manuring, a cause that acts by destroying the normal balances in the plants; (6) special cultural practices aiming at the "forcing" of the trees. The author states that investigations are under way for the trial of *Citrus trifoliata* and *C. limonellus* as subjects to the grafting of orange and lemon respectively.—A. Bonazzi.

1195. SCHOEVEA, T. A. C. Proeven met eenige chemicalien ter bestrijding van het wortelsaitje (*Heterodera radicicola* Greef). [Experiments with chemicals for the control of *Heterodera radicicola*.] Meded. Landhouwboogeschool, Wageningen 15: 65-88. 1918.—The author reports results of further experiments on the control of the root-knot nematode, *Heterodera radicicola* by applying various chemicals to pots of infested soil. He states that on the roots of tomato plants grown in those pots treated with formaldehyde and with lime mixed with ammonium sulphate no infection was found, but that slight infection occurred where naphthaline and carbolineum were applied. The other chemicals tested did not appreciably reduce infection.—L. P. Byars.

1196. SPAFFORD, W. J. Wheat and its diseases. Jour. Agric. S. Australia 21: 947-949. 1918.—The smuts, rust and take-all are described.—D. Reddick.

1197. STRANON, F. Une maladie nouvelle du Dahlia. [New disease of dahlia.] 5 p., 1 pl. Bruxelles, 1918.—A leaf spot of Dahlia, attributed to *Entyloma Calendulae* which appeared at Gembloux, Belgium, is marked by scattered, sparse, 5 to 7 mm. discolored areas, which later enlarge and become confluent. These spots contain great numbers of double-walled chlamydospores about 13 μ in diameter with remarkably refrangible contents. These spores germinate and form a promycelium with four basidiospores. No conidia were observed.—W. A. Orton

1198. TAYLOR, W. H. Silver-leaf disease in fruit trees. New Zealand Jour. Agric. 19: 88. 1919.—It is stated that silver-leaf or silver blight (caused by *Stereum purpureum*, a wound parasite) is one of the most formidable diseases which orchardists have to encounter and that no cure has been found. Drastic treatment in early stages by severe pruning, and in later stages by removing and destroying the trees including the roots, is advised.—E. R. Hodson.

1199. TUNSTALL, A. C. Tea roots. II. 17 p., 7 pl. India Tea Association, 1918.—Dis-eases of tea roots caused by the fungi, *Hymenochaete noxia*, *Ustilina zonata*, *Rosellinia bok-rina*, *Sphaerostilbe repens*, and *Thyradaria tarda*, result often in great losses. Symptoms of each disease are listed, followed by a detailed description of fungus and host relations. All the fungi are partly saprophytic, living as such mostly on dead stumps; hence are most abundant in forest areas. *Thyradaria tarda*, *Ustilina zonata*, and *Hymenochaete noxia* cause greater loss in sandy soil, while *Rosellinia* sp. and *Sphaerostilbe repens* have been observed only in heavy soils. All the fungi excepting *Thyradaria* may spread through the soil. Control measures: Encircle diseased plants with a trench and surrounding plants by a second trench. Remove and burn roots, add lime to soil where plants are attacked by *Rosellinia* sp. and *Sphaerostilbe repens*, and treat wounded or pruned surface in gardens where plants are diseased with *Thyradaria*.—J. I. Lauritzen.

1200. VERMOREL AND DANTONY. Les bouillies sulfo-calciques. [Lime-sulfur sprays.] Compt. Rend. Acad. Agric. France 1919: 161-164. 1919.—The various lime-sulfur sprays contain in solution hyposulfite, tetrasulfide, pentasulfide and oxysulfides of lime; the sediments contain sulfur, lime, sulfite of lime, sulfate of lime, and oxysulfide of lime. The relative proportions depend upon the temperature and length of boiling, proportion of lime and sulfur, amount of water, length of cooling, surface exposed to the air, impurities in the lime, etc.—E. A. Bessey.

1201. WEIR, JAMES E., AND ERNEST E. HUBERT. The influence of thinning on western hemlock and grand fir infected with *Echinodontium tinctorium*. Jour. Forestry 17: 21-35. 1919.

PHYSIOLOGY

B. M. DUGGAR, *Editor*

GENERAL

1202. WAKEMAN, NELLIE. Teaching plant chemistry. *Jour. Amer. Pharm. Assoc.* 8: 105-108. 1919.—See *Bot. Absta.* 3, Entry 922.

DIFFUSION, PERMEABILITY

1203. LOEB, JACQUES. The influence of electrolytes on the electrification and the rate of diffusion of water through collodion membranes. *Jour. Gen. Physiol.* 1: 717-745. 1919.—The author's experiments indicate that the diffusion of water through a collodion membrane depends on two kinds of forces, namely, first, those of gas pressure, and second, electrical forces. Solutions of neutral salts possessing a univalent or bivalent cation influence the rate of diffusion of water through a collodion membrane as if the water particles were charged positively. The attractive and repulsive action increases with the number of charges of the ion and diminishes inversely with a quantity the author designates arbitrarily as the "radius" of the ion. The same rule applies to solutions of alkalis. "Solutions of neutral or acid salts possessing a trivalent or tetravalent cation influence the rate of diffusion of water through a collodion membrane as if the particles of water were charged negatively." Solutions of acids obey the same rule, the high electrostatic effect of the hydrogen ion being probably due to its small "ionic radius."—*J. M. Brannon.*

1204. LOEB, JACQUES. Amphoteric colloids. IV. The influence of the valency of cations upon the physical properties of gelatin. *Jour. Gen. Physiol.* 1: 483-504. 1919.—A method of preparing metal gelatinates is indicated. The author finds that the osmotic pressure of a one per cent solution of gelatinates with univalent cations is almost exactly three times as great at the same PH as that of gelatinates with bivalent metals. The conductivities of the solutions of the two types of gelatin differ little or not at all. From experimental evidence given the author concludes that the proximity of the conductivities of metal gelatinates with univalent and bivalent metal excludes the possibility that the differences observed in osmotic pressure, viscosity, and swelling between metal gelatinates with univalent and bivalent metal are determined by differences in the degree of ionization. An explanation is offered, based on the hypothesis that aggregates of gelatin anions are formed with a single negative charge.—*J. M. Brannon.*

1205. LOEB, JACQUES. Amphoteric colloids. V. The influence of the valency of anions upon the physical properties of gelatin. *Jour. Gen. Physiol.* 1: 559-580. 1919.—The ratio of maximal osmotic pressure of a one per cent solution of gelatin sulfate and gelatine bromide is about 3 : 8. This same ratio was found for the ratio of maximal osmotic pressure of calcium and sodium gelatinates. It was found that twice as many molecules of HBr as of H_2SO_4 combined with a given mass of gelatin. It is also shown in this paper that the same number of molecules of phosphoric, citric, oxalic, tartaric, and succinic acids as of HNO_3 or HCl combines with the same mass of gelatin. Gelatin sulfate and gelatin bromide solutions of the same PH have practically the same conductivity. This, the author thinks, disproves the assumption of colloid chemists that the difference in the effect of bromides and sulfates on the physical properties of gelatin is due to a different ionizing and hydrating effect of the two acids upon the protein molecule.—*J. M. Brannon.*

1206. OSTERHOUT, W. J. V. A comparison of permeability in plant and animal cells. *Jour. Gen. Physiol.* 1: 409-413. 1919.—A striking agreement is shown between frog skin and plant tissues in respect to certain aspects of permeability, antagonism, injury, recovery, and death.—*J. M. Brannon.*

1207. OSTERHOUT, W. J. V. Antagonism between alkaloids and salts in relation to permeability. *Jour. Gen. Physiol.* 1: 515-519. 1919.—The alkaloids studied were nicotine, caffeine, and cevadine. Nicotine antagonizes the action of NaCl by inhibiting the fall of resistance which occurs in pure NaCl. Caffeine gives similar results. The tissues (*Laminaria*) die in cevadine in eighteen hours or less. In the case of caffeine (0.01-0.04 M) and of cevadine sulfate (0.0006-0.0025 M) a distinct decrease in permeability was found, followed by an increase. Nicotine gave a visible precipitate when added to water.—*J. M. Brannon.*

WATER RELATIONS

1208. HOLMES, M. G. Observations on the anatomy of ash-wood with reference to water-conductivity. *Ann. Bot.* 33: 255-264. *Fig. 1-7.* 1919.—See *Bot. Absts.* 3, Entry 1109.

MINERAL NUTRIENTS

1209. CALVINO, MARIO. Alta horticultura, las inyecciones interorganicas en las plantas. [Inorganic injections in plants.] *Revista Agric. Com. y Trab.* 2: 287-288. 7 *fig.* 1919.—See *Bot. Absts.* 3, Entry 1030.

METABOLISM (GENERAL)

1210. APPLEMAN, CHARLES O. Action of neutral salts on acid inversion of cane sugar. [Rev. of: LEBERT, M. Action des sels neutres sur l'inversion du sucre par les acides. *Rev. Gen. Bot.* 30: 241-244. 1918.] *Bot. Gaz.* 67: 94-99. Jan., 1919.

1211. APPLEMAN, CHARLES O. Effect of different oxygen pressures on carbohydrate metabolism of sweet potatoes. [Rev. of: HANSELBRING, HEINRICH. Effect of different oxygen pressures on the carbohydrate metabolism of the sweet potato. *Jour. Agric. Res.* 14: 273-284. 1918.—(See *Bot. Absts.* 1, Entry 1399).] *Bot. Gaz.* 67: 99-100. Jan., 1919.

1212. APPLEMAN, CHARLES O. Physiological rôle of glucosides in plants. [Rev. of: COMBES, RAOUL. Recherches biochimiques experimentales sur le rôle physiologique des glucosides chez les végétaux. *Rev. Gén. Bot.* 30: 226-237, 245-257. 1918. (See *Bot. Absts.* 3, Entry 439).] *Bot. Gaz.* 67: 101-102. 1919.

1213. BROWN, O. W., AND L. L. CARRICK. Catalytic preparation of the amidophenols and the phenylenediamines. *Jour. Amer. Chem. Soc.* 41: 436-440. 1919.

1214. CHOZIER, W. J. Intracellular acidity in *Valonia*. *Jour. Gen. Physiol.* 1: 581-583. 1919.—The cell-sap of *Valonia* is much more acid than the sea water in which the plant is living. The acidity of fifty cells varied in individual cases from Ph 5.01 to 6.7. The effect of exposure to darkness could not be detected in the reaction of the sap. *Valonia* quickly increases the alkalinity in the surrounding medium by abstraction of CO₂. There may develop an external alkalinity of Ph 9.5 or greater, but the internal acidity is maintained. It has been previously shown that sap from dead *Valonia* cells contained SO₄, while healthy cells do not. In *Valonia* natural death of a cell consumes some time, the change in the acidity of the cell-sap, paralleled by the change in permeability to SO₄, being a gradual process.—*J. M. Brannon.*

1215. FRED, E. B., AND A. R. C. HAAS. The etching of marbles by roots in the presence and absence of bacteria. *Jour. Gen. Physiol.* 1: 631-638. 1919.—The authors found that the etching power of roots increased in the presence of bacteria.—*J. M. Brannon.*

1216. GERTZ, OTTO. Laboratorietechniska och mikrokemiska notiser. 3. Om kristalliserande bladpigmenter hos *Haracleum*-arter och hos *Strobilanthes Dürriani*. [On crystallizing leaf-pigments in species of *Haracleum* and in *Strobilanthes Dürriani*.] [Swedish, with Ger-

man resumé.] Bot. Notiser 1918: 49-58. Fig. 1-2. 1918.—The species of *Heracleum* treated are: *H. granolense*, *H. eminense*, *H. villosum*, and *H. pyrenaicum*. In all, the pigment contains carotin, which crystallizes when treated with alcohol or acetone.—P. A. Rydberg.

1217. HACKB, INGO W. D. Bioelements. The chemical elements of living matter. Jour. Gen. Physiol. 1: 429-433. 1919.—A table is given showing the distribution of the bioelements in some living organisms and food; also, one showing distribution of chemical elements.—J. M. Brannon.

1218. HASSELBRING, H. Physiology of fungi. [Rev. of: DUGGAR, B. M., J. W. SEVERY, AND H. SCHMITZ. Studies in the physiology of fungi. Ann. Missouri Bot. Gard. 4: 165-173, 179-288. 1917.] Bot. Gaz. 67: 102. 1919.

1219. HEMMI, FUMIWO. On the carbohydrates of the edible tubers of Japan. Jour. Coll. Agric. Hokkaido Imp. Univ. 8: 33-76. 1918.—Six edible tubers of Japan were analyzed. In addition to the analyses for water, protein, fat, crude fiber, and nitrogen, the tubers were carefully analyzed for carbohydrate content, many tests being employed. Starch was most abundant (58 per cent to 71 per cent of dry matter); sugar (1.4 per cent to 16.6 per cent). Of the sugars, sucrose and glucose were most abundant, while fructose was present in small amounts in some tubers. Galactan and araban were also found to be present. The tubers of the following species were used: *Apios Fortunei* Maxim., *Colocasia antiquorum* Schott., *Corydalis ambigua* Cham. & Seb., *Dioscorea Batatas* Deene., *Eleocharis plantaginosa* R. Br., and *Helianthus tuberosus* L. These include all edible tubers of Japan not previously analyzed.—R. S. Nane.

1220. HENDERSON, L. J., EDWIN J. CORN, P. H. CATHCART, J. D. WACHMAN, AND W. O. FENN. A study of the action of acid and alkali on gluten. Jour. Gen. Physiol. 1: 459-472. 1919.—The authors venture the conclusion that in systems containing gluten and acids or bases the formation of salts, in accordance with the requirements of the mass law, is the fundamental phenomenon. They introduce the term "salt conductivity" which represents the effect of all other ions than those which may be hypothetically attributed to free HCl. Also the term "corrected salt conductivity" is used. This represents the effects of the action of the acid to increase conductivity, aside from the direct effect of the ions arising from those molecules of acid which remain free in the solution. This is compared with the total amount of acid which has disappeared from the solution. In some of the tables this comparison, in the form of a ratio, is designated R. From the tables there is seen to be a rough constancy of the ratio of corrected salt conductivity to combined acid. This does not hold true for lower ranges of acidity.—The authors found that the electrolytes originally present in gluten are sufficient per gm. of gluten to give a conductivity of approximately 200 to 100 cc. of water. From table VII they make the following conclusion: first, the weight of swollen gluten bears no relation to the true swelling because of variations in quantity of protein dissolved; second, it bears no relation to the H ion concentration, except when quantities of gluten and solution are kept constant; third, the chief factor in determining the weight of swollen gluten is the quantity of protein which has been dissolved away; fourth, the amount of gluten dissolved is greater, the greater the acidity; fifth, true swelling of gluten is greater, the greater the acidity. There seems to be a tendency for the true swelling of gluten to increase as the relative quantity of gluten increases. The viscosity seems to depend on H ion concentration, amount of water and electrolytes present in the swollen mass, and, at times, on the age of the system.—J. M. Brannon

1221. HUDSON, C. S., AND SHIGERU KOMATSU. The rotary powers of the amides of several α -hydroxy acids of the sugar group. Jour. Amer. Chem. Soc. 41: 1141-1147. 1919.—See Bot. Absts. 3, Entry 2144.

1222. HUDSON, C. S., AND K. P. MONROE. The amide of α -D-mannoheptonic acid. Jour. Amer. Chem. Soc. 41: 1140-1141. 1919.

1223. JACOBSEN, C. A. Alfalfa saponin. Alfalfa investigation VII. Jour. Amer. Chem. Soc. 41: 640-648. 1919.—Alfalfa saponin has the empirical formula $C_{27}H_{42}NO_{10}$. It hydrolyzes to a sapogenin and glucose. Each molecule of saponin has one pentose radical. In the case of fish the alfalfa saponin acts in an asphyxiating manner; otherwise it is not poisonous, except when injected subcutaneously. Then it causes local irritation and death. Alfalfa saponin is readily soluble in water and warm glycerine. It is slightly soluble in hot 95 per cent alcohol and in glacial acetic acid, very slightly in ethyl acetate, carbon tetrachloride, phenol, nitro-benzene, and methyl alcohol. It is insoluble or nearly so in cold 95 per cent alcohol, ether, chloroform, benzene, and amyl alcohol.—J. M. Brannon.

1224. MURREL, K. P. The preparation of xylose from corn cobs. Jour. Amer. Chem. Soc. 41: 1002-1004. 1919.—The method here described had for its object the removal of the adhesive gum by a more convenient laboratory method than extraction in an autoclave at 160°C. The gum is removed by digestion with dilute alkali at 100°.—J. M. Brannon.

1225. NELSON, E. K. The constitution of capsaicin, the pungent principle of Capsicum. Jour. Amer. Chem. Soc. 41: 1115-1122. 1919.

1226. NELSON, J. M., AND FRANK M. BEZOLE. Mutarotation of glucose and fructose. Jour. Amer. Chem. Soc. 41: 559-575. 1919.

1227. SHIBATA, KEITA, YUJI SHIBATA, AND ITIZO KASIWAGI. Studies on Anthocyanins: Color variation in anthocyanins. Jour. Amer. Chem. Soc. 41: 208-220. 1919.

1228. SMITH, C. R. The mutarotation of gelatin and its significance in gelation. Jour. Amer. Chem. Soc. 41: 135-150. 1919.

METABOLISM (ENZYMES, FERMENTATION)

1229. DAVIS, LEWIS, AND HARVEY M. MERKER. Studies on pepsin. I. Chemical changes in the purification of pepsin. Jour. Amer. Chem. Soc. 41: 221-228. 1919.—The purification of pepsin seems to consist in the elimination of secondary proteins including α -amino acids. Calcium and sulfur seem to be unaltered as a result of purification, but phosphorus is materially reduced. "Chlorides are seemingly removed." The optical activity appears unchanged.—J. M. Brannon.

1230. HIGGINS, B. B. Gum formation with special reference to cankers and decays of woody plants. Georgia Agric. Exp. Sta. Bull. 127: 21-60. Pl. 1-6, fig. 1-15. Jan., 1919.—Assuming that gummosis is probably brought about by the action of an enzyme whose formation from a *zymogen* might be induced by many forms of excitation, several attempts were made to isolate a pectin-dissolving enzyme from gumming wood, but without success. Gummosis in relation to temperature was studied on various species of *Prunus*, *Prunus mahaleb* L. being mainly used. Employing twigs under various conditions it is shown that gum formation is initiated by slight drying and that bud and callus growth will not start in a saturated atmosphere. With twigs it was experimentally determined that the minimum temperature at which perceptible gum formation occurs is near 10°C., optimum and maximum temperatures not being ascertained. Gumming in relation to chemical poisons was studied by introducing small quantities of $HgCl_2$, $CuSO_4$, and $(NH_4)_2SO_4$ under the bark of various species of *Prunus* and covering the wounds with grafting wax. After seventeen days no killing of the tissues was noted around the $(NH_4)_2SO_4$. The $HgCl_2$ and $CuSO_4$ induced gum formation around the wounds in forty-eight hours. The bark of the branches was killed from 15 to 60 cm. above the wound and to 2.5 cm. below, while the wood was killed to a greater distance with a dark deposit of gum at the lateral limits. Twigs of *Prunus persica* placed in diluted solutions of $HgCl_2$ from 1-500 to 1-1,000,000 showed gumming in dilutions of 1-500,000. Experiments on dormant trees showed that active growth is not essential for gum formation. For studying microtome sections the ruthenium red-methyl green combination stained the

middle lamellae bright red and the secondary lamellae green, the gum showing greater or less attraction for one or the other stain.—In relation to various diseases and injuries gumming was studied in a variety of woody plants. It is concluded that the process is quite general in woody plants and is due to the activities of an enzyme, the xymogen of which is constantly present. Certain stimuli induce the formation of large quantities of the enzyme causing liquefaction of the pectic substances, which are deposited in the tissues or exuded as gum. As a means by which plants are protected from serious injury through surface wounds or fungous attacks gum formation is considered important. A bibliography is appended.—T. H. McHutton.

METABOLISM (RESPIRATION)

1231. IRWIN, MARIAN. Comparative studies on respiration. VI. Increased production of carbon dioxide accompanied by decrease of acidity. Jour. Gen. Physiol. 1: 390-403. 1919.—The petals of *Salvia inaequalis* and *S. splendens* were employed in this study. The author finds that ether increases the consumption of oxygen in the petals of these plants as well as producing an increased production of CO_2 . There is also an accompanying decrease in the acidity of the cells.—J. M. Brannon.

1232. NOATHURP, J. H. The effect of various acids on the digestion of proteins by pepsin. Jour. Gen. Physiol. 1: 607-612. 1919.—The author found that in equal hydrogen ion concentrations the rate of pepsin digestion of gelatin, egg albumin, blood albumin, casein, and elastin is the same in the solutions of hydrochloric, nitric, sulfuric, oxalic, citric, and phosphoric acids. The rate of digestion of all the protein, with the exception of gelatin, was decreased by acetic acid. There was no evidence of antagonistic salt action. The aggregation of the protein and the viscosity of the solution have no marked influence on the rate of digestion of the protein.—J. M. Brannon.

1233. ROCKWOOD, ELBERT W. The effect of neutral salts upon the activity of ptyalin. Jour. Amer. Chem. Soc. 41: 228-230. 1919.

1234. SHERMAN, H. C., FLORENCE WALKER, AND MARY L. CALDWELL. Action of enzymes upon starches of different origin. Jour. Amer. Chem. Soc. 41: 1123-1129. 1919.—When wheat, maize, and rice starches are purified by washing with very dilute alkali, they show the same digestibility. When they are acted upon by the same kind and amount of amylase, they are all transformed into reducing sugar at essentially the same rate. "This is true whether the digestive agent be saliva, pancreatin, purified pancreatin, amylase, malt extract, purified malt amylase, taka-diastase, or the purified amylase of *Aspergillus oryzae*." Fatty substances hindered the hydrolysis of some of the cereal starches, especially maize.—J. M. Brannon.

1235. SHERMAN, H. C., A. W. THOMAS, AND M. E. BALDWIN. Influence of hydrogen ion concentration upon enzymic activity of three typical amylases. Jour. Amer. Chem. Soc. 41: 231-235. 1919.

ORGANISM AS A WHOLE

1236. BRANN, F. R. Factors concerning the drop of immature citrus fruit in central California. Monthly Bull. Comm. Hortic. California 2: 74-75. 1919.—See Bot. Absts. 3, Entry 1057.

1237. DAWSON, ANDREW IONATIUS. Bacterial variations induced by changes in the composition of culture media. Jour. Bact. 4: 133-148. 1919.—Variations in bacteria were induced by changing the environment in which the bacteria live. Cultures of *Bacillus coli* were grown on 8 different types of media for 200 generations and then tested for variation as to the chemical composition, including relative amounts of water and volatile matter, ash, sulphur, phosphorus, calcium, total nitrogen, amino-nitrogen, proteins, fats, and carbohydrates.

Variations were found to occur in the chemical composition of the different cultures and also in the biological characteristics. The latter included the ability to produce enzymes capable of splitting different carbohydrates with the formation of gas and acid, and the ability to agglutinate with immune rabbit serum prepared with the organism as antigen. Variations were so great as to change one generally recognized species, *Bacillus coli-communior*, into another, *Bacillus coli-communis*, by the use of fatty acids in the culture medium. Methods of work are included in the paper.—*Chester A. Darling.*

1238. HOWE, C. D. Making of the spruce tree. Canadian Forestry Jour. 14: 186. 1919.—See Bot. Absts. 3, Entry 548.

1239. ITANO, ARAO, AND JAMES NEIL. Influence of temperature and hydrogen ion concentration upon the spore cycle of *Bacillus subtilis*. Jour. Gen. Physiol. 1: 421-428. 1919.—Spores incubated at 5°C. for twenty days showed no apparent change except a slight swelling. This swelling took place in all hydrogen ion concentration tested (pH 1-13). At 25° the spores germinated in H ion concentration corresponding to the exponential range 5-10. The maximum germination was at pH 7 and pH 8.—*J. M. Bronnon.*

1240. LUNDEGÅRDH, HENRIK. Ekologiska och fysiologiska studier på Hallands Väderö. II. Till kännedom om strandväxternas fysiologi och anatomi. [The physiology and anatomy of shore-plants.] [Swedish, with English summary.] Bot. Notiser 1919: 1-39. 1919.

1241. PHILLIPS, R. W. Note on the duration of the prothallia of *Laetras filix-mas*. (Presl). Ann. Bot. 33: 265-266. 1919.—See Bot. Absts 3, Entry 1113.

GROWTH, DEVELOPMENT, REPRODUCTION

1242. APPLEMAN, CHARLES O. Root growth in cuttings. [Rev. of: CURTIS, OTIS F. Stimulation of root growth in cuttings by treatment with chemical compounds. Cornell Univ. Agric. Exp. Sta. Mem. 14: 71-138. 1918.] Bot. Gaz. 67: 100-101. 1919.

1243. GERTZ, OTTO. Kallushhypertrofier och några i samband dermed serående anatomisk-fysiologiska förhållanden hos minerade blad. [Callus hypertrophies and some anatomical-physiological conditions connected with them in insect-mined leaves.] [Swedish, with short German resumé.] Bot. Notiser 1918: 121-139. Fig. 1-129. 1918.—Callus formations, which had developed around borings of insect larvae in the leaves of *Lonicera xylosteum*, *L. periclymenum*, *Lamium album*, *Pyrus Malus*, *Betula verrucosa*, *Ronunculus repens*, and *Corylus Avellana*, are described and discussed. Reference literature, 20 articles.—*P. A. Rydberg.*

1244. REED, H. S., AND R. H. HOLLAND. The growth rate of an annual plant, *Helianthus*. Proc. National Acad. Sci. [U. S. A.] 5: 135-144. Fig. 1-5. 1919.—The growth of an organism depends on two groups of factors. One of these groups is essentially internal, and may be designated the genetic constitution of the individual; the other is essentially external, and consists of the complex of environmental influences. If the growth rate of an organism corresponds closely to the equation of autocatalysis, this fact would seem to indicate that growth is predominantly controlled by internal factors.—This paper analyzes growth data for fifty-eight sunflower plants from one lot of seed of unknown ancestry, which were grown in the field under favorable and fairly uniform conditions at Riverside, California. Height of stem was measured at seven-day intervals until elongation stopped. The variability in height as measured by the coefficient of variability increased rapidly for about two weeks and fluctuated irregularly thereafter. The rate of growth increased rapidly to a maximum, then rapidly declined as the flower head formed. The successive observed mean increments in height corresponded closely to the theoretical values calculated from the equation of autocatalysis. Temperature variations showed only a low and statistically unreliable correlation with the growth rate, while atmometer readings gave no significant evidence of such a correlation. When the plants are divided into four equal groups on the

basis of height at maturity, the constant K of the formula for autocatalysis is nearly the same for all four groups; evidently, therefore, the differences in height between these quartile groups were not due to differences in the growth constant.—It is concluded that the data indicate that the course of the growth process is dominated by internal factors.—Howard B. Frost.

MOVEMENTS OF GROWTH AND TURGOR CHANGES

1245. SMITH, ERWIN F. The cause of proliferation in *Begonia phyllomanica*. Proc. National Acad. Sci. [U. S. A.] 5: 36-37. 1919.—A "synopsis" of a paper to be published in *The Journal of Agricultural Research*. The leaves and stems of this begonia may proliferate as a result of injury to the leaves, stems, or roots. The shoots produced may be very numerous, though only a few establish permanent vascular connections and persist as true branches. Either acicular or glandular hairs, as well as ordinary epidermal cells, may produce buds. Only young cells are affected. The cause of proliferation is considered to be some cell change due to a sudden checking of the water supply.—Howard B. Frost.

1246. VAN AMELDEN, U. P. Geotropism and phototropism in the absence of free oxygen. *Recueil Trav. Bot. Néerland.* 14: 150-216. 5 pl. 1 fig., 1917. [Received, 1919.]—Experiments unlike those previously performed were done under normal atmospheric pressure and only partial pressure of oxygen was reduced. A specially constructed thermostat was used in which oxygen could be replaced by nitrogen by gradual diffusion. *Avena sativa* was taken because it proved particularly suitable as used by other experimenters. *Sinapis alba* (p. 191), because of the absence of cavities under the cotyledon, was the other plant worked with. A carbon filament lamp with photometric value 5 m.c. at one meter was the source of light. Commercial nitrogen from cylinders had its small amount of oxygen (about 3.3 per cent, removed with alkaline pyrogallol. Owing to the fact that the gas so treated formed a small quantity of carbon monoxide this had to be removed by passing the gas over heated copper oxide in a combustion furnace until it had no longer a toxic effect on the plants. The author found that it was necessary to deprive the seedlings of oxygen for a considerable time to inhibit phototropic curvature. This is owing, first, to the fact that, due to intramolecular respiration, the objects have sufficient energy at their disposal to enable them for a long time to perceive stimulus and react, when after stimulation they have been supplied with air; and, secondly, because it is possible that the intercellular cavities as well as the cavity found between the coleoptile and the first leaf, may hold air a long time. The results of the author agree with those of Correns in that oxygen is found necessary for the occurrence of stimulus movements. There is disagreement with Correns, however, in that the author finds the phenomena in geotropic and phototropic stimulation processes to be in all respects much alike. The author claims to overcome the difficulties of other methods by eliminating the variation due to partial vacuum while oxygen was removed from the plants, so that the marked difference in results and conclusions reported are claimed as justification of this criticism. When seedlings which had been long enough removed from the influence of oxygen are stimulated geotropically or phototropically in the absence of oxygen and are then at once placed in atmospheric air, they are unable to execute a reaction. If the seedlings are given a similar fore-period in an oxygen-free atmosphere, and the stimulus is administered in air in which the plants are left subsequently, a reaction does occur. In an oxygen-free environment the perception of a stimulus cannot therefore take place provided that the condition of a sufficiently long fore-period has been satisfied. If after perception of a geotropic or phototropic stimulus the seedlings are left in the oxygen-free-atmosphere, they do not react, so that the presence of oxygen is also necessary for the occurrence of the reaction. In an atmosphere of low oxygen content the seedlings remain for a long time able to perceive normally, but a prolonged stay in such an atmosphere weakens the power of perception. There are no indications that on complete or partial withdrawal of oxygen the reaction of seedlings to a geotropic stimulus differs from their reaction to a phototropic one.—J. A. Nieuwland.

1247. LUNDEGAARD, HENRIK. Über Beziehungen zwischen Reizgrösse und Reaktion beider geotropischen Bewegung und über den Autotropismus. [Stimulus magnitude and reaction in geotropic movement, also autotropism.] Bot. Notiser 1918: 65-118. Fig. 1-19. March, 1918.

REGENERATION

1248. LOEB, JACQUES. The physiological basis of morphological polarity in regeneration. II. Jour. Gen. Physiol. 1: 687-715. 1919.—The mass of the leaf attached to the stem influences the mass of air roots formed. Darkened leaves do not increase the mass of roots formed. When a stem is suspended horizontally, the roots come from the under side, except at the cut end where they appear around the whole circumference of the stem. If the under half of a horizontally suspended stem be removed, then roots appear on the upper half.—J. M. Brannon.

TEMPERATURE RELATIONS

1249. ÅKERMAN, Å. Über die Bedeutung der Art des Auftauens für die Erhaltung gefrorener Pflanzen. [Significance of the manner of thawing in the recovery of frozen plants.] Bot. Notiser 1919: 49-64; 105-126. 1919.

TOXIC AGENTS

1250. ARNOULD, A. Dommages causés aux végétaux par les fumées industrielles. [Damages caused to plants by industrial fumes.] [Rev. of: HOLMES, J. A., E. C. FRANKLIN, and R. A. GOULD. Report of the Selby Smelter Commission, U. S. Dept. Interior, Bur. Mines Bull. 98: 1-528. Pl. 1-41, fig. 1-14. 1915.] Rev. Eaux et Forêts 57: 121-125. 1919.—See Bot. Absts. 3, Entries 513 and 1150.

ELECTRICITY AND MECHANICAL AGENTS

1251. MERCHANT, A. Informe sobre tratamiento electrico de semillas antes de la siembra. [Electrical treatment of seed.] Revist. Agric. Com. y Trab. 2: 199-201. 1919.—A review is given of work done in England by H. E. Fry who treated seeds by passing an electric current through a salt solution containing the seeds. Good results were secured with seeds of oats, wheat, barley, and corn. Notes on the apparatus and results are included.—F. M. Blodgett.

MISCELLANEOUS

1252. BUTTERWICK, A. J. S. The use of Atlas preservative to kill trees. Indian Forester 45: 23-25. 1919.—See Bot. Absts. 3, Entry 521.

1253. CIAMICIAN, G. Comparazioni e ravvicinamenti. Acqua ed ammoniaca. [Comparisons and similarities. Water and ammonia.] Gaz. Chim. Italiana 49: 10-16. 1919.—A study of water and ammonia from a stoichiometrical standpoint. The similarity in behavior of H_2O , $-OH$, $=O$, to NH_3 , $-NH_2$, and $=NH$, in the formation of hydrogen peroxid, hydroxylamin, hydrazin. In the formation of $C=O$, $C=NH$, and various cyanide derivatives, urea, carbamic acid, guanidine, isourea ether, as well as dicyandiamide, biuret, and the nitril derivatives of HCN.—A. Bonazzi.

1254. FREN, E. B. The growth of higher plants in soils free of microorganisms. Jour. Gen. Physiol. 1: 623-629. 1919.—A method for sterilising seeds is described and also an apparatus for growing plants under sterile conditions.—J. M. Brannon.

1255. GERTZ, OTTO. Anomalier hos rhizoiderna a grodd-knoppar af *Lunaria cruciata* L. [Anomalies in the rhizoids on the gemmae of *Lunaria cruciata* L.] [Swedish, with German resumé.] Bot. Notiser 1918: 141-150. Fig. 1-21. 1918.—See Bot. Absts. 3, Entry 1118.

1256. HENDERSON, L. J., W. O. FENN, AND EDWIN J. COHN. Influence of electrolytes upon the viscosity of dough. *Jour. Gen. Physiol.* 1: 387-397. 1919.

1257. LARSON, W. P., W. F. CANTWELL, AND T. B. HARTZELL. The influence of the surface tension of the culture medium on the growth of bacteria. *Jour. Infect. Diseases* 25: 41-46. 1919.—A sodium salt of castor oil was used for depressing the surface tension of ordinary bacteriological broth. All pellicle forming bacteria ceases to grow at the surface where the tension is below 45 dynes, the surface tension of the broth itself being 59 dynes. When *S. subtilis* is grown on broth of low surface tension, the tendency to form spores is considerably reduced. Some anaerobes, notably *B. tetani*, grow well aerobically on a medium of reduced surface tension. It is suggested that the layer of oil used to cover media for the purpose of producing an anaerobiosis probably acts by reducing the surface tension rather than by excluding oxygen.—Selman A. Waksman.

1258. LECOMTE DU NOUY, P. A new apparatus for measuring surface tension. *Jour. Gen. Physiol.* 1: 621-624. 1919.

1259. LINNET. Sur l'utilisation des sarments de vigne, des pépins et des marcs de raisins. [The utilization of grape shoots, seeds, etc.] *Compt. Rend. Acad. Agric. France* 1919: 156-157. 1919.—See Bot. Absts. 3, Entry 1072.

1260. MOAENO, ENUARDO. La combustibilidad del tabaco. Contribucion al estudio agro-quimico de la planta. [Relation of fertilizers to combustibility of tobacco.] *Revist. Agric. Com. y Trab.* 2: 169-170. 1919.—See Bot. Absts. 3, Entry 1265.

SOIL SCIENCE

J. J. SKINNER, *Editor*

FERTILIZATION

1261. ASTON, B. C. Improvement of poor pasture. *New Zealand Jour. Agric.* 18: 15-27. 1919.—See Bot. Absts. 3, Entry 900.

1262. CLARK, C. F. The potato industry in Colorado. *Potato Mag.* 1st: 8-9, 22; 1st: 14-15, 29. 8 figs. 1919.—See Bot. Absts. 3, Entry 920.

1263. CLINTON, G. P. Prematuring and wilting of potatoes. *Potato Mag.* 1st: 12-13, 24. 1919.—See Bot. Absts. 3, Entry 1162.

1264. MCHATTON, T. H., J. W. FIBOR, AND R. E. BLACKBURN. Growing tomatoes in Georgia. *Georgia State Coll. Agric. Bull.* (Reprint) 145: 1-12. 4 pl., 17 figs. 1919.—See Bot. Absts. 3, Entry 1075.

1265. MORENO, ENUARDO. La combustibilidad del tabaco. Contribucion al estudio agro-quimico de la planta. [Relation of fertilizers to combustibility of tobacco.] *Revist. Agric. Com. y Trab.* 2: 169-170. 1919.—General discussion with results to follow in other articles.—F. M. Blodgett.

1266. WHEELER, H. J. Fertilizers stimulate production in Maine. *Potato Mag.* 1st: 30. 1 fig. 1919.

1267. WHEELER, H. J. What potatoes need in Wisconsin. *Potato Mag.* 1st: 14, 31. 1 fig. 1919.—Advocates use of complete commercial fertilizer.—Donald Folsom.

1268. WHITE, J. W. Fertilizer experiments on DeKalb soil. Yields of clover, corn and Kentucky blue grass. *Pennsylvania Agric. Exp. Sta. Bull.* 155: 3-20. 4 pl., 17 figs. 1919.—The experiments were conducted upon 33 plots of one-tenth acre each. They are intended to

test the comparative value in different forms and amounts of commercial fertilizers upon corn, oats, wheat, clover and pasture grasses on DeKalb soil for the purpose of ascertaining the most economical means of reclaiming the abandoned farmland in the DeKalb area and of increasing and maintaining the productivity of DeKalb soils now under cultivation.—*C. R. Orton.*

FERTILIZER RESOURCES

1266. ENAUGH, W. C. America's advance in potash production. *Bull. Sci. Lab. Denison Univ.* 19: 33-47. 1919.—The total production of fertilizer potash in the United States has increased from practically nothing in 1914 to 52,000 tons in 1918, thus reaching 22 per cent of the pre-war consumption.—Natural brine lakes have furnished 75 per cent of this increase, kelp reduction plants 8 per cent, molasses and distillery wastes 6 per cent, alunite deposits of Utah 5 per cent, cement mill dust 2 per cent.—The total capacity of these potash plants for 1919 is 100,000 tons or 40 per cent of normal consumption.—Only the kelp reduction plants closed down with the signing of the armistice.—*Harris M. Benedict.*

1270. HUTCHINSON, C. M. Nitrogenous fertilizers, their use in India. *Agric. Jour. India* 14: 203-214. 1919. India is in danger of depletion of the soil unless nitrogenous manures can be imported at a lower price, or better use can be made of indigenous supplies of nitrogen. A popular and practical discussion of the nitrogen question as related to India.—*F. M. Scherts.*

BIOLOGY

1271. BRISTOL, B. MURIEL. On the retention of vitality by algae from old stored soils. *New Phytol.* 18: 92-107. *Fig. 1-8.* 1919.—See *Bot. Absts.* 3, Entry 694.

1272. HUTCHINSON, C. M. Nitrogen fixation in Indian soils. *Agric. Jour. India* 14: 215-219. 1919.—The need of study on nitrogen fixation problems for India is urged.—*F. M. Scherts.*

1273. PEARSON, G. A. [Rev. of: HESSELMAN, HENRIK. Soil nitrofication in relation to forest reproduction. *Skogsvurdsforeningens Tidskr.*, 1: 1-104. 1918.] *Jour. Forestry* 17: 69-73. 1919.—See *Bot. Absts.* 3, Entry 564.

1274. TAMPLE, J. C. The value of ammonification tests. *Georgia Agric. Sta. Bull.* 126: 18 p. Jan., 1919.—Results obtained by studying the ammonifying efficiency, ammonifying inoculating power and ammonifying capacity of a series of soils showed an unexplainable disagreement. Further studies on another series of soils, ranging from a heavy clay subsoil to rich, friable clay and dark alluvial soil showed that the ammonifying efficiency of a soil is determined more by the physical or chemical character than by the biological. Experiments in modifying the soils chemically showed that the addition of phosphate in any form caused a large increase in the amount of the ammonia recovered; the largest amount being from the sample with the Mono-basic salt; thus showing that the increase was not due to the neutralization of acid; these results indicate that an abundant phosphorus supply might be an important factor in ammonia production in soils. When opening the bottles of the samples under test a distinct smell of ammonia was obtained; moistened red litmus paper was quickly changed to blue in the bottles. To test the possible loss of ammonia in this way samples were run in large bottles and in each was suspended a fluted filter paper moistened with H_2SO_4 . The amounts of ammonia recovered from the filter paper were, in two instances, .4 per cent of the total recovered from the sample. In some experiments cotton seed meal, casein and albumen were used as sources of nitrogen; the greater loss from the soil was found where casein was used, the smaller loss from cotton-seed meal. Dissolved and powdered casein and dried blood were used as sources of nitrogen. These results as well as other data at the station show the small value of ammonification tests as an aid to solution of bacterial problems. A bibliography is appended.—*T. H. McHilton.*

1275. WAKSMAN, SELMA A. The occurrence of *Azotobacter* in cranberry soils. *Science* 48: 653-654. 1918.—See Bot. Absts. 2, Entry 1145.

METHODS

1276. LYNN, C. J. On an electrical method of determining the lime requirement of soils. *Trans. Soc. Canada Sect. III.* 12: 21. 1918.—The method is based on the following theory as stated by the author: "If a soil lacks a certain fertiliser, for example K, P, Ca or N, it is probable that it will absorb this fertiliser from solution, and the greater the lack the greater the absorption." As a test of this theory a comparison was made of the lime requirements of 12 soils determined by the Rothamstead method, with those found by the proposed electrical method. The author concludes from the results reported that it may be possible to work out an electrical method for the determination of lime requirements of soils.—R. B. Deemer.

SOIL CLASSIFICATION

1277. WILSON, B. H. The need and objects of a soil survey in the Punjab. *Agric. Jour. India* 14: 281-291. 1919.—Soil survey is urged in connection with settlement, and irrigation problems. Mechanical analysis of soils is their main basis of classification. The results are plotted graphically on a triangular diagram and show the percentages of silt, sand and clay. The soils are further differentiated by plotting the logarithms of the ratio $\frac{\text{fine silt}}{\text{silt}}$ fine silt and $\frac{\text{fine sand}}{\text{coarse sand}}$ coarse-sand. The constitutive, additive, colligative, variable and agricultural properties of the soil are to be studied.—F. M. Schertz.

MISCELLANEOUS

1278. FAULKNER, O. T. "Water saving" experiments. *Agric. Jour. India* 14: 245-55. 1919.—Factors affecting water-cost are noted. Some of the problems discussed are: the relation between frequency of irrigation and the stage of growth of the crop; the best depth of water to apply at one time under varying conditions of soil, season and crop; relation between total irrigation and yield; richness of soil and water-cost of crops grown upon it; tilth of soil and water-cost of crops grown upon it.—F. M. Schertz.

1279. MILLER, JUSTUS. Northern Ontario seed potato trade. *Potato Mag.* 1st 5, 33-34. 1919.—See Bot. Absts. 3, Entry 881.

1280. SHUTT, FRANK T., AND E. A. SMITH. The 'alkali' content of soils as related to crop growth. *Trans. Roy. Soc. Canada (Sec. III.)* 12: 83. 1918.—The nature and distribution of "alkali" as occurring in soils of certain semiarid districts of Western Canada were studied, and the results presented in this paper are a contribution towards the establishment of standards as regards safe limits of alkali, particularly as applied to Canadian conditions. Analysis of five soil groups, each series consisting of three groups representative of land upon which (1) there was fair growth, the concentration of the alkali, if present, being apparently negligible, (2) there was poor growth, the crop evidently being distressed by the alkali, and (3) there was no growth due to excess of alkali, are reported. Five samples for each group were selected. The limits of toxicity of the various "alkalis" were determined for Western Rye grass upon a dark brown, almost black, moderately light loam, of good quality; subsoil of heavier character, a dark grey to yellow grey clay with a little sand; for native Prairie grass upon a fairly good sandy loam; subsoil of a heavier nature with a considerable portion of clay; for Oats upon a sandy loam of good quality; for Wheat upon a brown loam of fairly good quality; subsoil a heavy clay; for Onions upon a dark brown sandy loam, well supplied with organic matter; sandy subsoil with silty clay.—R. B. Deemer.

TAXONOMY OF VASCULAR PLANTS

J. M. GREENMAN, Editor

PTERIDOPHYTES

1281. BONAPARTE, R. Notes Pteridologiques. [Pteridological Notes.] 7: 1-418. Published by the author: Paris, Oct. 14, 1918.—The present fascicle is concerned with ferns represented in the herbarium of Prince Bonaparte. Several lists of ferns from different parts of the world are presented and the species enumerated are accompanied by important data. The following new species and varieties are included: *Pteris decurrenti-pinnulata* from Formosa, *Trichomanes javanicum* Blume var. *glabra*, *Dryopteris crenulata*, *D. parasitica* O. Kuntze var. *oureoglondulosum*, *Leptochilus pentagonalis*, *Adiantum caudatum* L. var. *onguaticulobata*, *A. caudatum* L. var. *latilobata*, *Pteris quadriaurita* Retz. var. *infurcata*, and *Cyclophorus rhomboidalis* from China, *Polystichum pauciaculeatum* and *Blechnum Bakeri* Christensen var. *glabra* from Madagascar, *Leptochilus acrostichoides* Christensen var. *cuneata* western Africa, *Dryopteris adenoelamys* Christensen var. *minor* from French Soudan, *Darallia denticulata* Mett. var. *Vogelii* forma *camerounensis* from Cameroun, *Hymenophyllum Kuhnii* Christensen var. *stenoloba* from Nyassaland, *Asplenium praemorsum* Sw. var. *angustilobum* from Orange Free State, *Elaphoglossum perelegans* Moore var. *integrisquamulata* from Guadeloupe, *Dryopteris setigera* O. Kuntze var. *aquaticulata* from Tahiti, *Nephrolepis dayakorum* and *Pteris dayakorum* from Borneo, *Oleandra Whitmeei* Baker var. *minor* and *Elaphoglossum morquiesarum* from the Marquesas Islands.—J. M. Greenman.

1282. DODGE, CHARLES KEENE. Contributions to the botany of Michigan, II. Observations on the flowering plants, ferns and fern allies growing wild in Marquette County, Michigan, in 1916 and 1917, especially in the vicinity of the Huron Mountain Club. Univ. Michigan Mus. Zoology, Misc. Pub. No. 5. 44 p., 1 map. July 13, 1918.—See Bot. Absts. 3, Entry 1289.

1283. HAYATA, RINZO. Notes on Archangiopteris and Protomarattia. [Article in Japanese.] Bot. Mag. Tôkyô, 32: 237-244. 1918.—Study on phylogeny of *Archangiopteris* and a new genus *Protomarattia* is briefly stated. The author records 4 species of *Archangiopteris*, among them *A. subintegra* and *A. tamdaoensis* are stated as new to science, both of them are found in Tonking, China. His new genus *Protomarattia* is very close to *Archangiopteris* in its vegetative organs, while in the propagative organs the genus is rather near to *Marattia*. Lastly the author emphasizes an importance of the stelar system for the systematic study of *Marattiaceae*.—T. Matsumoto.

1284. MATSURA, SADAHISA. A list of plants collected in Szechuen by I. Yamadaira. Bot. Mag. Tôkyô. 32: 165-174. 1918.—See Bot. Absts. 3, Entry 1309.

1285. ROENDBL, H. V. Tre för Norra Europa nya Asplenier. [Three Asplenias new to northern Europe.] Bot. Notiser 1918: 161-168. 1918. These are: *Asplenium adulterinum* Milde and *A. adulterinum* × *viride* Aschers. from the mountain Taherg, province of Småland, Sweden, and *A. Adiantum-nigrum* subsp. *cuneifolium* Viv. from the vicinity of Bruvik on Østero, Södre Bergenshus amt, Norway. Two new forms of the first are also described: forma *decumbens* and forma *microphyllum*.—P. A. Rydberg.

SPERMATOPHYTES

1286. BEAUVEND, G. Excursions phytogéographiques aux environs de Viège et de Zermatt (Valais). [Phytogeographic excursions in the vicinity of the Viège and in Zermatt (Valais).] Bull. Soc. Bot. Genève II, 10: 258-316. Fig. 4. 1918.—In connection with a discussion of the general character of the vegetation of the region under consideration several new varieties, forms, and hybrids of flowering plants are characterized, and a few new combinations are made.—J. M. Greenman.

1287. BROS, J. W. The grasses and grasslands of South Africa. 8vo. vi + 161 p., 34 fig., 1 map. P. Davis & Sons, Ltd.: Pietermaritzburg, 1918.—The subject is treated under four captions; namely, (I) Introduction, (II) Key to the genera and species of South African grasses, (III) General sketch of the grasslands of South Africa and their development. The key covers approximately 500 species. A list of scientific names of the grasses and their English, Dutch, Zulu, and Sesuto names is given in an Appendix. [See Bot. Abstr. 2, Entry 1.]—J. M. Greenman.

1288. CARDOT, J. Notes sur des Rosacées d'Extrême-Orient. [Notes on the Rosaceae of the extreme Orient.] Bull. Mus. Hist. Nat. Paris 24: 63-87. 1918.—This article concerns the Rosaceae of China and Japan and includes new combinations with name-bearing synonyms in parentheses and new names, as follows: *Cydonia Delavayi* (*Pirus Delavayi* Franch.), *C. japonica* Pers. var. *cathayensis* (*C. cathayensis* Hemsl.), *Pirus Matsumurae* (*Malus Matsumurae* Koidz.), *P. micromalus* (*Malus micromalus* Mak.), *P. theifera* (*Malus theifera* Rehd.), *P. Sieboldii* Regel. var. *integrifolia* (*P. Toringo* var. *integrifolia* Fr. & Sav.), *P. Sieboldii* Regel. var. *incisa* (*P. Toringo* var. *incisa* Fr. & Sav.), *P. Henryi* (*Sorbus Henryi* Rehd.), *P. Zahlbruckneri* (*Sorbus Zahlbruckneri* Schneid.), *P. commutata*, *P. Hemslayi* (*Micromeles Hemslayi* Schneid.), *P. zanthoneura* (*Sorbus zanthoneura* Rehd.), *P. pekinensis* (*Sorbus pekinensis* Koehne), *P. amurensis* (*Sorbus amurensis* Koehne), *P. Wilsoniana* (*Sorbus Wilsoniana* Schneid.), *P. pluripinnata* (*Sorbus foliolosa* var. *pluripinnata* Schneid.), *P. Rahderiana* (*Sorbus Rahderiana* Koehne), *P. mesogea*, *P. mesogea* var. *syncarpa* (*Sorbus hupehensis* var. *syncarpa* Koehne), *P. reuncupata*, *P. Koehneana* (*Sorbus Koehneana* Schneid.), *P. cashmiriana* (*Sorbus cashmiriana* Hedl.), *P. setchwanensis* (*Sorbus Vilmorini* var. *setchwanensis* Schneid.), *P. sambucifolia* Cham. & Schl. var. *pseudogracilis* (*Sorbus sambucifolia* var. *pseudogracilis* Schneid.), *P. commixta* (*Sorbus commixta* Hedl.), *P. rufoferruginea* (*Sorbus rufoferruginea* Koidz.), and *P. sibirica* (*Sorbus sibirica* Hedl.). Several new forms are also characterised.—J. M. Greenman.

1289. DODGE, CHARLES KEENE. Contributions to the botany of Michigan, II. Observations on the flowering plants, ferns and fern allies growing wild in Marquette County, Michigan, in 1916 and 1917, especially in the vicinity of the Huron Mountain Club. Univ. Michigan Mus. Zoology, Misc. Pub. No. 5. 44 p., 1 map. July 13, 1918.—The title amply indicates the scope and character of this contribution. The manuscript was completed by the author shortly before his death, but the paper was edited for publication by Messrs. C. Billington and B. Gladewits. The list of species is a very full one for a limited area, and the habitat and distributional notes are of especial interest.—J. M. Greenman.

1290. GAGNEPAIN, F. Cucurbitacées nouvelles de l'Herbier du Muséum. [New Cucurbitaceae in the Herbarium of the Museum.] Bull. Mus. Hist. Nat. Paris 24: 371-380. 1918.—The following new species are described from China: *Alsomitra Balansea*, *A. tonkinensis*, *Gomphogyne Bonii*, *G. Delavayi*, *Gymnopetalum monoicum*, *G. Penicaudii*, *Momordica Eberhardii*, *M. laotica*, *M. tonkinensis*, *Schizopepon Fargesii*, *S. longipes*, *S. Wilsonii*, *Trichosanthes bariensis* and *T. Pierrei*.—J. M. Greenman.

1291. GAGNEPAIN, F. Revision des Thladiantha asiatiques du Muséum. [Revision of the Asiatic Thladiantha of the Museum.] Bull. Mus. Hist. Nat. Paris 24: 287-296. 1918.—The author presents a synoptical revision of the Cucurbitaceous genus *Thladiantha*, which is distributed chiefly in eastern Asia, and recognizes 19 species of which the following are described here for the first time: *Thladiantha montana*, *T. yunnanensis*, *T. Oliveri* Cogn., *T. plabra* Cogn., *T. Legendrei*, *T. heptadactyla* Cogn., *T. maculata* Cogn., *T. villosula* Cogn., *T. verrucosa* Cogn., and *T. tonkinensis*.—J. M. Greenman.

1292. GERBAULT, ED. Recherches sur la Constitution du Phénotype Linnéen *Ranunculus repens* dans la province du Maine et la Basse-Normandie. [Researches on the constitution of the Linnean phenotype *Ranunculus repens* occurring in Maine and Lower Normandy.] Bull. Soc. Agric. Sci. and Arts Sarthe 11, 38: 305-343. Pl. 3, text fig. 7. 1918.—The author presents

a brief discussion of the species concept with particular reference to *Ranunculus repens* L. and characterizes the following subspecies: *R. repens* subsp. *Bernardii*. *R. repens* subsp. *latifolius*, *R. repens* subsp. *Desportesianus*, *R. repens* subsp. *angustifolius*, *R. repens* subsp. *scriptus*, and *R. repens* subsp. *reptabundus*.—J. M. Greenman.

1293. GRANDE, L. Note di floristica. Bull. Ort. Bot. Napoli 5: 55-67. 1918.—Important notes are recorded concerning several species of flowering plants and the following new combinations are included: *Lens ervoides* (*Cicer ervoides* Brignoli), *Crispis aurea* (L.) Cass. subsp. *lucida* (*Apargia lucida* Ten.), *Ruppia cirrhosa* (*Buccaferrea cirrhosa* Petagna), and *Althaea biennis* (*Alcea biennis* Winterl).—J. M. Greenman.

1294. GRANDE, L. Rettificazioni ed aggiunte all' Index Kewensis. [Corrections and additions to the Index Kewensis.] Bull. Ort. Bot. Napoli 5: 179-259. 1918.

1295. GUADAGNI, M. La vegetazione della Penisola Sorrentina. [The vegetation of the Sorrento Peninsula.] Bull. Ort. Bot. Napoli 5: 133-178. 1918.—The subject is considered under three captions: (1) A bibliography of the principal works concerning the Sorrento Peninsula, (2) Physical description of the district, (3) Botanical explorations of the Sorrento Peninsula. The last part is primarily a brief historical sketch of the botanical explorations and publications relating to the region under consideration from 1572 to the present time.—J. M. Greenman.

1296. HYATA, BUNZO. On a new species of *Salvia* and a new variety of *Chelonopsis*. [Article in Japanese.] Bot. Mag. Tôkyô 32: 252. 1918.—A brief description of a new species *Salvia omerocalyz* and *Chelonopsis moschata* Miq. var. *lasiocalyz* is given. For detailed description see "Daiwan Shokubutsu Zusetsu, Vol. 8."—T. Matsumoto.

1297. HOEHNE, F. C. Cataloga e revisão das Leguminosae do Herbario do Museu Paulista com a descrição de algumas espécies e variedades novas encontradas no mesmo. [Catalog and revision of Leguminosae of the Herbarium of the Museu Paulista, with descriptions of several new forms.] Rev. Mus. Paulista, São Paulo 10: 647-704. 9 pl. 1918.—The following new species and varieties are described: *Acacia subpaniculata*, *Piptadenia Loeffgreniana*, *Calliandra Novaeisii*, *Desmanthus tathuensis*, *Mimosa desmanthoides*, *M. insidiosoides*, *M. delicatula*, *M. eriophylloides*, *M. eriophylloides* var. *lanosa*, *Sassia Loeffgreniana*, and *C. ignorata*.—J. M. Greenman.

1298. HOEHNE, F. C. Orchidaceas novas e menos conhecidas dos arredores de São Paulo. [New or little known orchids from the environs of São Paulo.] Rev. Mus. Paulista, São Paulo 10: 437-446. 3 pl. 1918.—*Restrepia crassifolia* Edwall is redescribed, and two new species of *Spiranthes* are proposed namely, *S. oligantha* and *S. butantanensis*.—J. M. Greenman.

1299. IWAKI, TAKANORI. Microscopical distinctions of some Japanese coniferous woods. [Article in Japanese.] Bot. Mag. Tôkyô. 32: 187-198, 219-237. 1918.—The author gives the detailed description of the microscopical distinctions manifested by the wood tissue of some Japanese conifers: *Sciadopitys verticillata* S. & Z., *Thujaopsis dolabrata* S. & Z., *Thuja japonica* Maxim., *Thuja* (*Biota*) *orientalis* Endl., *Cupressus sempervirens* L., *Chamaecyparis obtusa* S. & Z., and *Chamaecyparis pisifera* S. & Z. Remarkable characteristics of each genus and family are also stated. No marked difference is noted between the different plants of the same species obtained from different geographical origin.—T. Matsumoto.

1300. JUEL, H. O. Plantae Thunbergianae. Ein verzeichnis der von C. P. Thunberg in Südafrika, Indien und Japan gesammelten und der in seinen Schriften beschriebenen oder erwähnten pflanzen, sowie von den exemplaren derselben, die im Herbarium Thunbergianum in Upsala aufbewahrt sind. [Plants of Thunberg. A catalogue of the plants collected by C. P. Thunberg in South Africa, India, and Japan, and described or mentioned in his writings, as well as specimens of the same which are preserved in the Herbarium in Upsala.] Roy Soc.

48 p., 1 portrait, 1 map, and 1 text fig. A. B. Akademiska Bokhandeln, Upsala, and Otto Harrassowitz, Leipzig. 1918.—The ample title of this work indicates the general character of the contents. A rather brief biography of Thunberg and a complete list of his publications precede the enumeration of his plants. The genera and species of Thunberg's various publications are listed in full and arranged alphabetically under their respective families; and a relatively large percentage of them are still valid. Of the 74 generic names proposed by Thunberg about 40 are universally recognised in the literature of the present time.—J. M. Greenman.

1301. KOIDEUMI, GENITI. Contributions ad floram Asiae orientalis. [Contributions to the flora of eastern Asia.] Bot. Mag. Tôkyô. 32: 249-259. 1918.—The present article is a continuation from p. 138 of this publication, and the following species are described as new to science: *Ochrosta hexandra*, *Rapanea Maximoviczii*, *Erythronium boninensis*, *Quercus yagayanaensis*, *Ficus Nishimurae*, *Thea tegmentosa*, *T. Miyagii*, *T. virgata*, *Eurya boninensis*, *Elaeocarpus pachycarpa*, *Rubus Nishimuranus*, *Scutellaria longituba*, *Machilus pseudokobu*, *M. boninensis*, *Neolitsea boninensis*, *N. gilva*, *N. glauca*, *N. aciculata*, *N. stenophylla*, *Eugenia oxygonia*, and *Rhamnus senanensis*.—T. Matsumoto.

1302. LECOMTE, HENRI. Le "Capucin" des Seychelles. [The "Capucin" of the Seychelles.] Bull. Mus. Hist. Nat. Paris 24: 284-286. 1918.—Among the trees of the Seychelles Islands, there are two which are known by the vernacular name of "Capucin." These are *Northea seychellana* Hook. f. and *N. brevifolulata* H. Lec. The latter is a species new to science.—J. M. Greenman.

1303. LECOMTE, HENRI. Les Sapotacées du genre Baillonella. [The Sapotaceae and the genus Baillonella.] Bull. Mus. Hist. Nat. Paris 24: 142-148. 1918.—A short discussion of the genus *Baillonella* of Pierre is presented, and a new species, *B. obovata*, is added from Congo.—J. M. Greenman.

1304. LECOMTE, HENRI. Observations sur les Delpydora. [Observations on Delpydora.] Bull. Mus. Hist. Nat. Paris 24: 455-458. Fig. 2. 1918.—From critical studies made, the author gives an emended description of the genus *Delpydora* Pierre and maintains two African species *D. macrophylla* Pierre and *D. gracilis* Chevalier.—J. M. Greenman.

1305. LECOMTE, HENRI. Une nouvelle plante à fleurs épiphyllées. [A new plant with epiphyllous flowers.] Bull. Hist. Nat. Paris. 24: 55-62. Fig. 4. 1918.—The author gives a brief review of the genus *Phyllocladum* and describes one new species, *Phyllocladum bracteatum*, and a new variety *P. bracteatum* var. *coriaceum*, from Congo.—J. M. Greenman.

1306. LÜDERWALT, G. O Herbario e o Horto Botânico do Museu Paulista. [The Herbarium and the Botanical Garden of the Paulista Museum.] Rev. Mus. Paulista, São Paulo 10: 285-311. 1 Pl. 1918.

1307. MACCAUGHEY, VAUGHAN. The endemic palms of Hawaii: Pritchardia. Plant World 21: 317-328. 1918.

1308. MAIDEN, J. H. A critical revision of the genus Eucalyptus. Vol. IV, Part 7. P. 774-800, pl. 152-156. (Part xxxvii of the complete work.) William Applegate Gullick: Sydney. 1919.—The present part contains descriptions, synonymy, notes, and illustrations of the following species: *Eucalyptus clarigera* A. Cunn., *E. grandifolia* R. Br., *E. aspera* and *E. papuana* F. v. M.—See Bot. Absts. 3, Entry 2995.—J. M. Greenman.

1309. MATSUDA, SADAHISA. A list of plants collected in Szechuen by I. Yamadzuta. Bot. Mag. Tôkyô 32: 165-174. 1918.—The present list consists of 56 species, representing 32 families, which were collected by I. Yamadzuta in Szechuen several years ago. Among them *Sida szechuenensis*, *Spiraea japonica* L. f. var. *Yamazutae*, *Lysimachia paridiformis* Franch. var. *intermedia*, *Daphne ambigua*, *Setaria mauritiana* Spreng. f. *pilosa*, and *Polypodium ensatum* Thunb. f. *lobatum* are described as new to science.—T. Matsumoto.

1310. MATSUDA, SADAHISA. Supplement to the list of plants from Hainan. [Article in Japanese.] Bot. Mag. Tōkyō. 32: 266. 1918.—Twenty-seven species are added to the "List of plants from Hainan," which was published in this magazine. Vol. 31, No. 208.—T. Matsumoto.

1311. MINO, MARCEL. Contribution à l'étude du genre *Stemodia* et du groupe des *Stemodiées* en Amérique. [Contribution to the study of the genus *Stemodia* and some groups of the *Stemodiées* in America.] Bull. Soc. Bot. Genève II, 10: 155-252. Fig. 1-41. 1918.—Thirty-two species of *Stemodia* are recognized as occurring in America, seven of which are described as new, namely: *S. tenuifolia*, *S. neglecta*, *S. humilis*, *S. Chodatii*, *S. villosa*, *S. scoparioides* Hassler & Mino, *S. orbiculata*, and *S. pilcomayensis*. All of these new species occur in South America or Mexico, as do the following newly described subspecies and forms: *S. jorullensis* HBK. subsp. *replans*, *S. palustris* St.-Hil. forma *salicifolia*, *S. stricta* Cham. & Schlecht. var. *paucidentata* and *multidentata*. A number of new combinations are made and four new monotypic genera in the *Stemodiées* are proposed. The new genera are: *Chodaphyton*, based on *Stemodiaca ericifolia* Kuntze; *Lendneria*, based on *Capraria humilis* Solander; *Verena*, based on *Stemodia Hassleriana* Chodat, and *Valeria*, based on *Columna trifoliata* Link.—Adele Lewis Grant.

1312. MIYAZAWA, BUNGO. On the origin of "Kirishima-tsantanji" (*Rhododendron obtusum* Planch.). Bot. Mag. Tōkyō 32: 318-331. 1918.—"Kirishima" which has been known as *Rhododendron obtusum* Planch. should be called *Rhododendron Kaempferi* Planch. var. *obtusum*. "Kirishima-tsutsuji" and "Kurume-tsutsuji" (*Rh. obtusum* Planch. var. *Sakamotoi* Komatsu) are considered to be closely related in their ancestral forms.—T. Matsumoto.

1313. MURBECK, SV. Über die organisation und verwandtschaftlichen Beziehungen der gattung *Lepuropetalon*. [On the organization and natural relationship of the genus *Lepuropetalon*.] Arkiv för Botanik 15: No. 10, 12 p. 1918.—The author has made a detailed study of the structure of the flower, fruit, and seeds of *Lepuropetalon* and concludes that its relationship is with *Parnassia* rather than with *Chrysosplenium* to which genus it has been hitherto allied by most authors.—J. M. Greenman.

1314. NAKAI, TAKENOSHIN. A new attempt to the classification of genus *Arabis* growing in Japan, Corea, Saghaline and the Kuriles. Bot. Mag. Tōkyō 32: 233-248. 1918.—A new classification of Japanese *Arabis* is stated in the key. Bibliography, synonymy and distribution of species are also given. *A. Stelleri* var. *macrocarpa*, *A. Boissieuana*, *A. Boissieuana* var. *nikoensis*, *A. Boissieuana* var. *shikotana*, *A. takesimana*, *A. Fauriei* Boiss. var. *grandiflora*, and *A. Kishidai* are new to science. The author enumerates *Stenophragma Thalium*, because it has often been classed under *Arabis*. As stated in the key, *Stenophragma* has incumbent cotyledons and the seeds are more roundish than those of *Arabis*.—T. Matsumoto.

1315. NAKAI, TAKENOSHIN. Notule ad Plantas Japoniae et Koreae XVIII. [Notes on Plants of Japan and Korea xviii.] Bot. Mag. Tōkyō 32: 215-232. 1918.—The plants (341-373) found in Japan and Korea are listed. Among them *Salix splendens*, *Boehmeria boninensis*, *Phytolacca insularis*, *Rosa xanthinoides*, *Viola seoulensis*, *Angelica takesimana*, *Gardneria insularis*, *Arisaema capillatum*, *Distylium lepidotum*, *Schima boninensis*, *Schima luikiensis*, *Elaeagnus Nikaii*, *Veronica Miqueliana*, *Symplocos Tanakana*, *Symplocos argutidens*, *Veronica holophylla*, *Diervilla subsessilis* and *Saxifraga octopetala* are new to science.—T. Matsumoto.

1316. OTTOLANDER, T. *Rafflesia-natuurmonumenten in Sumatra*. Natuurmonumenten van Nederlandsch Indie. Mededeeling 2. 21 p., 3 pl. May, 1918.

1317. PELLEGRIN, FRANÇOIS. Quelques remarques sur les Dioscoréacées du Paraguay. [Some remarks on the Dioscoreaceae of Paraguay.] Bull. Soc. Bot. Genève II, 10: 383-388. 1918.—The author presents notes on several species of the Dioscoreaceae of Paraguay and

includes the following new combination and new variety: *Dioscorea multiflora* Mart. var. *concepcionis* (*Dioscorea concepcionis* Chod. & Hassl.), and *D. guaranitica* Chod. & Hassl. var. *balanosa*.—J. M. Greenman.

1318. SAMPAIO, A. J. DE. *Ipomaea* Glaziovii. U. Damm. Rev. Mus. Paulista, São Paulo 10: 231-244. 7 Pl. 1918.—The author presents a detailed account of *Ipomaea Glaziovii* U. Damm. and contrasts this species with *I. sinuata* Ort. to which it appears to be most closely related.—J. M. Greenman.

1319. SILVEIRA, ALVARO DA. O Mandapuçá (*Ciposia* Mandapuca Alv. Silv.) Novo genero das Myrtaceas. Rev. Mus. Paulista, São Paulo 10: 153-159. 1 pl. 1918.—*Ciposia Mandapuca* is described and illustrated as a new genus and species of the Myrtaceae from Brasil.—J. M. Greenman.

1320. SURRE, H. Conspectus systematicus Hieraciorum Europae. [Systematic conspectus of Hieracium of Europe.] Bull. Soc. Etud. Sci. Angers. 47: 1-56. 1918.—The present conspectus is an outline of the author's treatment of *Hieracium* giving the subgenera, sections, species, and varieties with synonyms, but without bibliography and descriptions.—J. M. Greenman.

1321. TAKEDA, HISAYOSHI. Notes on far eastern plants. I-VI. Bot. Mag. Tôkyô 32: 164-203. Fig. 1-47. 1918.—New facts, records and remarks on a few far eastern plants are briefly stated. The plant which has long been known as *Gaultheria pyrolloides* is not conspecific with the Indian *G. pyrolloides*, and should be called *G. Miqueliana* sp. nov. The writer says that *Parnassia alpicola* and *P. simplex* are not distinct species, and proposes to arrange them as *Parnassia alpicola* Mak. var. *evoluta* Tak. and *P. alpicola* var. *simplex* Hay. & Tak. The chief points of difference of the three forms of *Cnidium ajanense* Drude are briefly stated. Distribution of *Vitis Coignetiae* var. *glabrescens* Nak. and occurrence of *Parnassia palustris* var. *alpina* Drude in Japan is reported.—T. Matsumoto.

1322. VALETON, TH. New notes on the Zingiberaceae of Java and Malaya. Bull. Jard. Bot. Buitenzorg II, 27: 1-166. Pl. 1-50. 1918.—The present paper embodies the author's results of further extended studies on the Zingiberaceae of the Malayan Archipelago. The genera treated are *Curcuma*, *Gastrochilus*, *Kaempferia*, and *Zingiber*. A rather large number of new species is described and a few new combinations are made; a list of these follows: *Curcuma colorata*, *C. euchroma*, *C. ochrorhiza*, *C. soloensis*, *C. brog*, *C. Mangga* Val. & v. Zijp, *C. Heyneana* Val. & v. Zijp, *C. phaeocaulis*, *C. Lörzingii*, *C. longispica*, *C. sylvatica*, *Gastrochilus Lörzingii*, *G. apiculatum*, *G. striatum*, *G. latilabrum*, *G. laxiflorum*, *G. gracile*, *G. Kunstleri* (*Curcuma Kunstleri* Bak.), *Kaempferia rotunda* L. var. *concolor*, *Hapochlorella decussylvae* (*Kaempferia decussylvae* Hall), *Zingiber aromaticum*, *Z. littorale* (*Z. Zerumbet* Sm. var. *littoralis* Val.), *Z. papuanum*, *Z. Oltensii*, *Z. acuminatum* var. *borneensis*, *Z. acuminatum* var. *acutibracteata*, *Z. Lörzingii*, *Z. macroglossum*, and *Z. pachystachys*.—J. M. Greenman.

1323. ZIMMERMANN, WALTHER. Mitteilungen zur Orchideens-Gruppe aus Baden. [Contribution to the Orchis-Aceras group from Baden.] Mitt. Bad. Land. Naturkunde und Naturschutts, Freiburg. N. S. 1: 21-31. 1 pl., 1 text fig. July 20, 1919.—This article is concerned with a discussion of hybrids between *Orchis* and *Aceras*.—J. M. Greenman.

